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SPS -9

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**SAMPLING AND TESTING PLAN
SPS-9 EXPERIMENTAL PROJECT
US-23 SOUTHBOUND
DELAWARE COUNTY, OHIO**

**Strategic Highway Research Program
Long Term Pavement Performance
Specific Pavement Studies**

**Prepared By
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TABLE OF CONTENTS

	Page
List of Tables	
List of Figures	
1.0 Introduction	1
2.0 Layout of Test Sections	1
3.0 Materials Sampling and Testing	2
3.1 Subgrade.....	2
3.2 Embankment	2
3.3 Dense Graded Aggregate Base	3
3.4 Asphalt Treated Free Drainage Base	3
3.5 Asphalt Treated Base	3
3.6 Asphalt Concrete	4
3.7 Samples for Long Term Storage	4
3.8 Cores for Asphalt Testing	4
4.0 Overview of Sampling and Testing Plan	5
5.0 Sampling and Testing for Each Layer	5
5.1 Introduction	5
5.2 Subgrade.....	6
5.3 Embankment	8
5.4 Dense Graded Aggregate Base	9
5.5 Asphalt Treated Free Drainage Base	10
5.6 Asphalt Treated Base	11
5.7 Asphalt Concrete	13
5.8 Samples for Long Term Storage	14
5.9 Asphalt Cores for Asphalt Testing.....	15
6.0 Logs and Reports.....	16
7.0 Handling and Shipping of Samples	16
8.0 Sample Storage	16
9.0 Laboratory Testing.....	17
10.0 References.....	17
Tables	
Figures	

LIST OF TABLES

Table No.	Title
Table 1	Limits of Test Sections
Table 2	Design Features of Test Sections
Table 3A	Material Sampling Requirements for Test Sections
Table 3B	Material sampling Requirements for LTPP Reference Library
Table 4	Summary of Field Tests on Each Layer
Table 5	Laboratory Materials Test Plan for Each Layer
Table 6	Locations for Bulk Samples and Moisture Samples from Prepared Subgrade, Embankment and Aggregate Base
Table 7	Locations for Shelby Tube Sampling from Subgrade
Table 8	Field and Laboratory Test Plan for Subgrade
Table 9	Locations for In-place Density and Moisture Tests on Prepared Subgrade, Embankment and Aggregate Base
Table 10	Locations for Elevation Measurements
Table 11	Locations for 20 ft Shoulder Probes
Table 12	Locations for FWD Tests
Table 13	Field and Laboratory Test Plan for Embankment
Table 14	Field and Laboratory Test Plan for Dense Graded Aggregate Base
Table 15	Locations for Bulk Sampling of Asphalt Treated Free Drainage Base and Asphalt Treated Base
Table 16	Field and Laboratory Test Plan for Asphalt Treated Free Drainage Base
Table 17	Coring Locations for Asphalt Treated Base and Asphalt Concrete
Table 18	Field and Laboratory Test Plan for Asphalt Treated Base
Table 19	Locations for Nuclear Density Tests on Asphalt Treated Base and asphalt Concrete
Table 20	Locations for Bulk Sampling of Asphalt Concrete and Asphalt Cement
Table 21	Field and Laboratory Test Plan for Asphalt Concrete
Table 22	Sampling Times of Cores for Asphalt Testing

LIST OF FIGURES

Figure No.	Title
Figure 1	Layout of Test Sections
Figure 2	Design Features for Test Sections
Figure 3	Legend for Figures 4 to 5
Figure 4	Sampling and Testing for ODOT Section
Figure 5	Sampling and Testing for SHRP Section
Figure 6	Overview of Sampling and Field Testing Plan for Subgrade
Figure 7	Overview of Sampling and Field Testing Plan for Embankment
Figure 8	Overview of Sampling and Field Testing Plan for Dense Graded Aggregate Base
Figure 9	Overview of Sampling and Field Testing Plan for Permeable Asphalt Treated Base (ATFDB)
Figure 10	Overview of Sampling and Field Testing Plan for Asphalt Treated Base (ATB)
Figure 11	Overview of Sampling and Field Testing on Asphalt Concrete (AC)
Figure 12	Location of Center Line of Pavement
Figure 13	Cores for Asphalt Testing - Sampling Locations and Timetable
Figure 14	Cores for Asphalt Testing - Sampling Plan

1.0 INTRODUCTION

The SHRP experimental project SPS-9, "Validation of SHRP Asphalt Specifications Mix Design and Innovations in Asphalt Pavements", has been developed to provide a direct comparison in terms of the measured performance between existing highway agencies asphalt specifications, asphalt-aggregate mixture specifications, mixture design procedures and SHRP's performance-based specifications and mix design.

A SPS-9 experiment is planned for construction on Southbound US-23 in Delaware County, Ohio. The Delaware County SPS-9 site incorporates two test sections. One test section incorporates the state's current mixture design while the other test section incorporates the SHRP mix. Both test sections are built as a part of a new asphalt concrete roadway.

Field tests are conducted and samples obtained at the two test sections at different stages of construction. The purpose of the sampling and testing activities is to document the conditions of the as-built pavement layers. The sampling and testing at each section is conducted on the outer lane (right lane). The sampling and testing includes two types of testing activities: (a) Pavement/materials performance testing and (b) asphalt mixtures testing. Pavement/materials Performance Testing includes tests intended for materials characterization and pavement performance evaluation. Asphalt mixture testing includes tests intended for asphalt research and validation of SHRP performance-based specifications.

This document presents the type, number, and locations for the sampling and testing activities at different stages of construction on the two test sections. In addition, it contains details of the laboratory tests to be conducted on the samples. Further details of the SPS-9 experiment, material sampling procedures and laboratory testing procedures are given in References 1 through 3.

The laboratory tests shall be performed by the Ohio DOT laboratory or their designee and the FHWA-LTPP Laboratory Materials Testing Contractor.

2.0 LAYOUT OF TEST SECTIONS

The layout of the two test sections included in the SPS-9 experimental project is shown in Fig. 1. This figure shows the monitoring portion of the each test section, which is 500 feet long. Table 1 gives the section limits for the two test sections. Each test

section includes a monitoring section of 500 feet, and 250 feet at each end of the monitoring section which is used to obtain material samples. The pavement layer materials and thicknesses for the two sections are shown in Table 2.

3.0 MATERIALS SAMPLING AND TESTING

Material sampling and field testing are required at different stages of construction. These activities shall be conducted according to the standards specified or referenced in this document. The standards may be specific to the SHRP-LTPP program or standard AASHTO/ASTM methods. LTPP sampling and field testing procedures have been developed specifically for the SHRP program and are described in Reference 2. In addition, protocols have been developed by SHRP for conducting laboratory tests. These protocols are documented in Appendix E.2 of the SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing (Ref. 1).

In all test sections, sampling and field testing shall commence from the prepared subgrade surface. A summary of the samples to be obtained and field tests to be performed on all layers are described next.

3.1 Subgrade

The following sampling and field tests shall to be performed on the subgrade.

- Obtain thin-wall tube samples.
- Obtain bulk samples and moisture samples.
- Conduct moisture and density tests using the nuclear gauge on the prepared subgrade surface.
- Conduct elevation measurements on the prepared subgrade surface.
- Conduct deflection testing using a Falling Weight Deflectometer (FWD) along the outer wheelpath and mid-lane of the compacted subgrade surface.
- Conduct auger probes on the shoulder of test sections to a depth of 20 feet from the prepared subgrade surface to detect the presence of a rigid layer.

3.2 Embankment

The following sampling and field tests shall to be performed on the embankment.

- Obtain bulk samples and moisture samples.

- Conduct moisture and density tests using the nuclear gauge on the prepared embankment surface.
- Conduct elevation measurements on the prepared embankment surface.
- Conduct deflection testing using a Falling Weight Deflectometer (FWD) along the outer wheelpath and mid-lane of the compacted embankment surface.

3.3 Aggregate Base (DGAB)

- Conduct nuclear moisture and density tests on compacted aggregate base using the nuclear gauge.
- Obtain bulk samples and moisture samples from the compacted aggregate base.
- Conduct elevation measurements on the compacted aggregate base surface.
- Conduct deflection testing using a Falling Weight Deflectometer (FWD) along the outer wheelpath and mid-lane of the compacted aggregate base.

3.4 Asphalt Treated Free Drainage Base (ATFDB)

- Obtain bulk samples of uncompacted asphalt treated free drainage material from the paver or the haul vehicle immediately prior to lay-down.
- Conduct elevation measurements on the prepared surface of the asphalt treated free drainage base.
- Conduct deflection testing using a Falling Weight Deflectometer (FWD) along the outer wheelpath and mid-lane of the compacted asphalt treated free drainage base.

3.5 Asphalt Treated Base (ATB)

- Obtain bulk samples of uncompacted asphalt treated base material from the paver or haul vehicle immediately prior to lay-down.
- Conduct nuclear density tests on the compacted asphalt treated base.
- Conduct elevation measurements on the prepared surface.
- Conduct deflection testing using a Falling Weight Deflectometer (FWD) along the outer wheelpath and mid-lane.
- Obtain cores from the asphalt treated base layer.

3.6 Asphalt Concrete (AC)

- Obtain bulk samples of uncompacted asphalt concrete from the paver or haul vehicle immediately prior to laydown. Samples from the intermediate course and the surface course are required.
 - Obtain bulk samples of asphalt cement used in the asphalt concrete from the plant.
 - Conduct nuclear density tests on the compacted asphalt concrete intermediate course and the surface course.
 - Conduct elevation measurements on the prepared asphalt concrete surface.
- Obtain cores from asphalt concrete layer. The cores required for materials characterization are obtained immediately after construction.

3.7 Samples for Long Term Storage

- Obtain samples of asphalt cement used for asphalt based layers.
- Obtain bulk samples of the graded coarse and fine aggregate used for all asphalt based layers except the permeable asphalt treated base.
- Bulk samples of the uncompacted mix from all asphalt based layers.

3.8 Cores for Asphalt Testing

- The cores required for asphalt research are obtained at different time intervals. The first set of cores are obtained immediately after construction. The other sets of cores are obtained during spring, summer or fall at pavement ages of 3, 6, 12 and 18 months and in the fall at pavement ages of 24, 48, 96 and 168 months.

The material sampling requirements for the test sections and are summarized in Table 3A. Table 3B gives the samples that are required for the LTPP Materials Reference Library.

A summary of the field tests that are to be conducted on each layer are presented in Table 4. The laboratory tests to be conducted on the subgrade, embankment, aggregate base, permeable asphalt treated base, asphalt treated base and asphalt concrete material are given in Table 5. This table also gives the SHRP test designations and the SHRP Protocols for all tests.

The detailed plan for sampling and field testing showing the sampling and field test locations as well as the detailed laboratory testing plan which allocates samples for each laboratory test will be described in the next sections.

4.0 OVERVIEW OF SAMPLING AND TESTING PLAN

Figure 2 gives an overview of the layer types and thickness in all sections. Figures 4 and 5 show the location and type of samples to be obtained and field tests to be performed on each layer at the two test sections. Figure 3 gives the legend for the notations used in these figures. Elevation measurements shall be conducted on all layers. FWD testing all be conducted on all layers except asphalt concrete. All sampling and field testing in each layer shall be completed before construction begins on the next layer. Locations for field tests and sampling in these figures are specified according to the construction stationing.

An overview of the sampling and field testing requirements for the different pavement layers for all sections are shown in Figs. 6 through 11.

5.0 SAMPLING AND TESTING FOR EACH LAYER

5.1 Introduction

Sampling, field tests and laboratory tests for each pavement layer will be described in this section. Refer to Figures 4 and 5 for detailed sampling and testing locations on each test section, and to Figures 6 through 11 for an overview of sampling and testing on each pavement layer. All sampling and field tests shall be conducted according to the specified standards for sampling and testing. These standards are either AASHTO standards, ASTM standards or methods specific to the SHRP program. All laboratory tests shall be conducted according to protocols developed for the SPS-9 experiment that are in Appendix E.2 of the SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing (Ref. 1).

The laboratory tests specified in this document shall be conducted by Ohio DOT or an Ohio DOT designated laboratory and by the FHWA-LTPP Materials Testing Contractor. Sampling, field testing and laboratory testing for each layer is described in the next sections. The offsets for sampling and testing locations in the tables in this sampling

plan are given from the center line of the pavement. Figure 14 shows the location of the center line of the pavement.

5.2 Subgrade

Sampling and testing shall be conducted on the prepared subgrade surface.

5.2.1 Sampling

Bulk samples and moisture samples from the prepared subgrade surface shall be obtained from the test sections at the locations given in Table 6. Prior to obtaining bulk samples at these locations, nuclear moisture/density testing shall be conducted at the sampling locations. The bulk sampling shall consist of a single excavation, 2 feet by 2 feet in area and 12 inches deep. Approximately 400 pounds of material shall be obtained from each sampling location. Following procedures outlined in Section 3.3.2 of Reference 4, from this 400 lb sample, 100 pounds shall be shipped to the state laboratory or their designee and 300 pounds shall be shipped to the FHWA-LTPP laboratory material testing contractor.

Thin-wall tube samples shall be obtained from the prepared subgrade at the locations shown in Table 7. The Shelby tubes shall have an outside diameter of 3 in., an inner diameter of 2.8 in. and be 24 in. long. Samples shall be obtained to a depth of 4 feet from the surface. Therefore, at each location two Shelby tube samples are obtained. These operations shall be performed in accordance with AASHTO T207, "Thin-wall Tube Sampling of Soils." If thin-wall tube samples can not be obtained, split-spoon samples shall be obtained. Split-spoon sampling shall be performed using a 140 pound hammer, 30 inch drop and a sampler specified in AASHTO T206. After performing split-spoon sampling, the barrel shall be opened and the recovered material shall be carefully examined and logged to record the length of the recovery and description of the soil. The soil layers should be identified and recorded on Sampling Data Sheet 4-1 (see Appendix B in Ref. 4). If rock, boulders or other forms of dense materials are encountered within four feet of the top of the layer, another attempt for sampling shall be made at a different location with a longitudinal offset of 5 to 10 feet. If refusal occurs at a second location, split-spoon sampling shall be terminated.

5.2.2 Field and Laboratory Tests

A summary of the field and laboratory test plan for the subgrade is shown in Table 8. This table also gives the SHRP Protocols that shall be followed when conducting these

tests. The applicable procedures outlined in SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing (Ref. 1) shall be followed prior to conducting any laboratory tests.

The following field tests shall be conducted on the prepared subgrade surface.

1. Density and Moisture Tests: Locations for in-place density and moisture tests on the prepared subgrade are shown in Table 9. The density/moisture measurements shall be made using direct transmission method for density and the backscatter method for moisture determination. Density determinations shall be conducted using AASHTO T238-86, "Standard Method for Density of Soil and Soil Aggregate in Place by Nuclear Method (Shallow Depth)", Method B - Direct Transmission. Moisture measurements shall be conducted using AASHTO T239-86, "Moisture Content of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depths, Backscatter Method)". For the density test, the rod shall be imbedded 4 to 8 inches below the layer surface as appropriate to test the full layer. At each testing location, four readings of one minute each shall be conducted with the nuclear testing instrument rotated 90° between each reading.
2. Elevation Measurements: Elevation measurements shall be performed on the surface of the prepared subgrade at all test sections. The elevation measurements shall be conducted at the following locations: (1) five points across the lane at 50 feet intervals between the beginning and end of the monitoring section. (2) five points across the lane, at 25 feet prior to the beginning of the monitoring section and 25 feet from the end of the monitoring section. The locations at which the elevation measurements are to be performed at the test sections are given in Table 10. Each elevation measurement shall be measured with an accuracy within 0.01 ft.
3. Auger Probes : Auger probes to a depth of 20 feet from the prepared subgrade surface shall be performed on the shoulder at locations specified in Table 11. These probes are conducted to determine if significantly dense layers exist within 20 feet from the top of the prepared subgrade. If refusal occurs prior to 20 feet, the probe shall be continued at a nearby location 5 to 10 feet away. If refusal occurs at the second location, the auger probe activity shall be terminated.
4. Deflection Testing: Deflection testing using a Falling Weight Deflectometer (FWD) shall be performed on the prepared subgrade surface at all test sections. The locations at which deflection tests are to be carried out in the test sections

are shown in Table 12. The procedures given in SHRP Protocol P59 shall be followed when conducting deflection testing.

5.3 Embankment

Sampling and testing shall be conducted on the prepared subgrade surface.

5.3.1 Sampling

Bulk samples and moisture samples from the prepared embankment surface shall be obtained from the test sections at the locations given in Table 6. Prior to obtaining bulk samples at these locations, nuclear moisture/density testing shall be conducted at the sampling locations. The bulk sampling shall consist of a single excavation, 2 feet by 2 feet in area and 12 inches deep. Approximately 400 pounds of material shall be obtained from each sampling location. If the thickness of the embankment is less than 12 inches, then the area of the excavation shall be increased to obtain the specified weight of the material. Following procedures outlined in Section 3.3.2 of Reference 4, from this 400 lb sample, 100 pounds shall be shipped to the state laboratory or their designee and 300 pounds shall be shipped to the FHWA-LTPP laboratory material testing contractor.

5.3.2 Field and Laboratory Tests

A summary of the field and laboratory test plan for the embankment is shown in Table 13. This table also gives the SHRP Protocols that shall be followed when conducting these tests. The applicable procedures outlined in SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing (Ref. 1) shall be followed prior to conducting any laboratory tests.

The following field tests shall be conducted on the prepared embankment surface.

1. Density and Moisture Tests: Locations for in-place density and moisture tests on the prepared embankment are shown in Table 9. The density/moisture measurements shall be made using direct transmission method for density and the backscatter method for moisture determination. Density determinations shall be conducted using AASHTO T238-86, "Standard Method for Density of Soil and Soil Aggregate in Place by Nuclear Method (Shallow Depth)", Method B - Direct Transmission. Moisture measurements shall be conducted using AASHTO T239-86, "Moisture Content of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depths, Backscatter Method)". For the density test, the rod shall be imbedded 4 to 8 inches below the layer surface as appropriate to test the full layer. At each testing location, four readings of one minute each

shall be conducted with the nuclear testing instrument rotated 90° between each reading.

2. Elevation Measurements: Elevation measurements shall be performed on the surface of the prepared embankment at both test sections. The elevation measurements shall be conducted at the following locations: (1) five points across the lane at 50 feet intervals between the beginning and end of the monitoring section. (2) five points across the lane, at 25 feet prior to the beginning of the monitoring section and 25 feet from the end of the monitoring section. The locations at which the elevation measurements are to be performed at the test sections are given in Table 10. Each elevation measurement shall be measured with an accuracy within 0.01 ft.
3. Deflection Testing: Deflection testing using a Falling Weight Deflectometer (FWD) shall be performed on the prepared embankment surface at both test sections. The locations at which deflection tests are to be carried out in the test sections are shown in Table 12. The procedures given in SHRP Protocol P59 shall be followed when conducting deflection testing.

5.4 Aggregate Base

5.4.1 Sampling

Bulk samples and moisture samples from the compacted aggregate base shall be obtained at the locations shown in Table 6. Nuclear moisture and density tests shall be performed at the bulk sampling locations prior to obtaining bulk samples. Each bulk sample shall contain 400 pounds of material. Following procedures outlined in Section 3.3.3 of Reference 3, from this 400 lb sample, a 100 pound sample shall be shipped to the state laboratory or their designee and a 300 pound sample shall be shipped to the FHWA-LTPP Laboratory Material Testing Contractor.

5.4.2 Field and Laboratory Tests

A summary of the field and laboratory tests to be conducted on the aggregate base is shown in Table 14. This table also gives the SHRP Protocols that shall be followed when conducting these tests. The applicable procedures outlined in SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing (Ref. 1) shall be followed prior to conducting any laboratory tests.

The following field tests shall be conducted on the prepared aggregate base surface.

1. In Place Nuclear Density and Moisture Tests: Perform tests on top of the prepared aggregate base at locations specified in Table 9. The density/moisture measurements shall be made using direct transmission method for density and the backscatter method for moisture determination. Density determinations shall be conducted using AASHTO T238-86, "Standard Method for Density of Soil and Soil Aggregate in Place by Nuclear Method (Shallow Depth)" Method B - Direct Transmission. Moisture measurements shall be conducted using AASHTO T239-86, "Moisture Content of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depths, Backscatter Method)". For the density test, the rod shall be imbedded 4 to 8 inches below the layer surface as appropriate to test the full layer. At each testing location, four readings of one minute each shall be conducted with the nuclear testing instrument rotated 90° between each reading.
2. Elevation Measurements: Elevation measurements shall be performed on all test sections which contain an aggregate base. Elevation measurements on the prepared aggregate base shall be conducted at the following locations: (1) five points across the lane at 50 feet intervals between the beginning and end of the monitoring section. (2) five points across the lane, at 25 feet prior to the beginning of the monitoring section and 25 feet from the end of the monitoring section. The locations at which the elevation measurements are to be performed are given in Table 10. Each elevation measurement shall be measured with an accuracy within 0.01 ft.
3. Deflection Testing: Deflection testing using a Falling Weight Deflectometer (FWD) shall be performed on the prepared aggregate base at all test sections which contain an aggregate base. The locations at which deflection tests are to be carried out at the test sections are shown in Table 12. The procedures given in SHRP Protocol P59 shall be followed when conducting deflection testing.

5.5 Asphalt Treated Free Drainage Base (ATFDB)

5.5.1 Sampling

Bulk samples of uncompacted asphalt treated free drainage base material shall be obtained from the haul vehicle or the paver. The samples shall be obtained from the mix that is to be placed at the locations shown in Table 15. Each sample shall contain 100 pounds of material. These samples shall be obtained in accordance with AASHTO T168.

5.5.2 Field and Laboratory Tests

A summary of the field tests to be conducted on the prepared ATFDB surface and laboratory tests to be conducted on the uncompacted ATFDB samples are shown in Table 16. The applicable procedures outlined in SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing (Ref. 1) shall be followed prior to conducting any laboratory tests. The field tests to be conducted on the prepared ATFDB surface are described next.

1. Elevation Measurements: Elevation measurements shall be performed on the prepared ATFDB layer at both test sections. The elevation measurements shall be conducted at the following locations: (1) five points across the lane at 50 feet intervals between the beginning and end of the monitoring section. (2) five points across the lane, at 25 feet prior to the beginning of the monitoring section and 25 feet from the end of the monitoring section. The locations at which the elevation measurements are to be performed at the test sections are given in Table 10. Each elevation measurement shall be measured with an accuracy within 0.01 ft.
2. Deflection Testing: Deflection testing using a Falling Weight Deflectometer (FWD) shall be performed on the compacted ATFDB surface. The locations at which deflection tests are to be carried out are shown in Table 12. The procedures given in SHRP Protocol P59 shall be followed when conducting deflection testing.

5.6 Asphalt Treated Base (ATB)

5.6.1. Sampling

Bulk Samples

Bulk samples of uncompacted asphalt treated base material shall be obtained from the haul vehicle or the paver. The samples shall be obtained from the mix that is to be placed at the locations shown in Table 15. Each sample shall contain 200 pounds of material. These samples shall be obtained in accordance with AASHTO T168 and shipped to the laboratory.

Core Samples: Cores of 4 inch diameter have to be obtained from the asphalt treated base. Cores from the asphalt treated base shall be obtained at the same time when cores are obtained from the asphalt concrete surface. The locations at which cores from the asphalt treated base shall be obtained are shown in Table 17. The direction of traffic shall be marked on all cores.

5.6.2 Field and Laboratory Tests

The laboratory testing plan for uncompacted asphalt treated base material and cores from asphalt treated base is shown in Table 18. This table also includes the field tests to be performed on the prepared asphalt treated base surface. The applicable procedures outlined in SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing (Ref. 1) shall be followed prior to conducting any laboratory tests. The visual examination and determination of thickness of the cores shall be performed before conducting any laboratory tests on the cores.

If the asphalt cement used in the asphalt treated base is different from that used for asphalt concrete, a 5-gallon samples of the asphalt cement shall be obtained from the plant. The tests listed to be performed on the asphalt cement from the plant in Table 21 have to be performed on these samples.

The following field tests shall be conducted on the prepared asphalt treated base surface.

1. Nuclear Density Tests: Nuclear density testing shall be conducted on the prepared surface of the asphalt treated base at locations specified in the Table 19. The density testing shall be performed at the specified locations using AASHTO T238-86, backscatter mode. Each testing location shall have four readings with the density instrument rotated 90° between each reading.
2. Elevation Measurements: Elevation measurements shall be performed on all sections that contain an asphalt treated base. The elevation measurements shall be conducted on the prepared asphalt treated base at the following locations: (1) five points across the lane at 50 feet intervals between the beginning and end of the monitoring section. (2) five points across the lane, at 25 feet prior to the beginning of the monitoring section and 25 feet from the end of the monitoring section. The locations at which the elevation measurements are to be performed at the test sections are given in Table 10. Each elevation measurement shall be measured with an accuracy within 0.01 ft.
2. Deflection Testing: Deflection testing using a Falling Weight Deflectometer (FWD) shall be performed on the prepared asphalt treated base on both test sections. The locations at which deflection tests are to be carried out at the test sections are given in Table 12. The procedures given in SHRP Protocol P59 shall be followed when conducting deflection testing.

5.7 Asphalt Concrete (AC)

In each test section, two asphalt concrete mixes are used (intermediate course and surface course).

5.7.1 Sampling

Bulk Sampling

Bulk samples of uncompacted asphalt concrete material shall be obtained from the paver or the haul vehicle from the mix that is to be placed approximately at the locations shown in Table 20. At each location, samples shall be obtained from both asphalt concrete mixes (intermediate course and surface course). Each asphalt concrete sample shall contain 200 pounds of material. These samples shall be obtained in accordance with AASHTO T168 and shipped to the laboratory.

Asphalt Cement

A 5-gallon sample of the asphalt cement that is used for the production of the asphalt concrete shall be obtained from the plant. The sampling schedule and the sample designation are given in Table 20.

Core Samples: Core samples of 4 inch diameter shall be obtained from the compacted asphalt concrete surface. The locations from which the cores shall be obtained are given in Table 17. Cores from the asphalt treated base shall be obtained at all these locations when cores are obtained from the asphalt concrete surface.

Coring operations shall be performed in accordance with AASHTO T24-B6, "Obtaining and Testing Drilled Cores and Sawed Beams of Concrete." Carbide or diamond bit drilling is to be performed. Mist or air cooled drilling is preferred as the best method to minimize water contamination of the underlying layers. If necessary, to obtain cores of suitable quality, the pavement may be cooled by dry-ice or other means prior to coring. Cores of multiple layers of asphalt concrete shall not be separated in the field. Plugs shall not be inserted in cores. Suction cups or wire pulls have been successfully used for core extraction. Care shall be taken to obtain cores at a 90 degree angle to the pavement surface and that the edges are straight, intact, smooth and suitable for laboratory testing. Details on tolerance and quality Control of the cores are included in Section 3.3.6 (Ref. 4). The direction of traffic shall be marked on all cores using a waterproof marking material. All cores must be dried before packaging.

5.7.2 Field and Laboratory Tests

The field tests to be conducted on the compacted asphalt concrete surface as well as laboratory tests to be conducted on the uncompacted material and cores of asphalt concrete

are shown in Table 21. This table also gives the SHRP Protocols that are to be followed when conducting these tests. The applicable procedures outlined in SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing (Ref. 1) shall be followed prior to conducting any laboratory tests. The visual examination and determination of thickness of the cores shall be performed before conducting any laboratory tests on the cores. The following field tests are to be conducted on the prepared asphalt concrete surface.

1. Nuclear Density Tests: The locations for nuclear density tests are specified in Table 19. Nuclear density tests shall be conducted after the placement of the intermediate course as well as after the placement of the surface course. The density testing shall be performed at the specified locations using AASHTO T238-86, backscatter mode. Each testing location shall have four readings with the density instrument rotated 90° between each reading.
2. Elevation Measurements: Elevation measurements shall be performed on the prepared asphalt concrete surface at all sections. The elevation measurements shall be conducted at the following locations: (1) five points across the lane at 50 feet intervals between the beginning and end of the monitoring section. (2) five points across the lane, at 25 feet prior to the beginning of the monitoring section and 25 feet from the end of the monitoring section. The locations at which the elevation measurements are to be performed are given in Table 10. Each elevation measurement shall be measured with an accuracy within 0.01 ft.

5.8 Samples for Long Term Storage

The LTPP Materials Reference Library requires additional samples for long term storage. The following samples are required for long term storage from the SHRP mix as well as the State mix.

1. Asphalt Cement: Obtain a 55-gallon sample that is used in the production of asphalt concrete from the plant. A sample from the asphalt cement used for the state mix as well as a sample from the SHRP mix shall be obtained. The asphalt cement shall be sampled from the plant using AASHTO T40, "Sampling Bituminous Materials", after the asphalt cement has been heated for mixing.
2. Aggregate (Combined Coarse and Fine Aggregate): Obtain a sample of 1,000 lb from the plant. Obtain samples from the State mix and the SHRP mix for both the intermediate and surface course. This material shall be sampled in conformance with applicable portions of AASHTO T2, "Sampling Aggregates".

For drum plants, the aggregates should be obtained from the charging (inclined) conveyor using the bypass chute, if possible. Otherwise, the sample should be taken from the belt on the charging conveyor. For batch plants, the aggregate can be sampled from the inclined conveyor at the dryer.

3. Asphalt Concrete: Obtain 200 lb samples from the State Mix and the SHRP mix for both the intermediate course and the surface course. The samples shall be obtained from the paver or the haul vehicle immediately prior to laydown. These materials shall be sampled in conformance with AASHTO T168, "Sampling Bituminous Paving Mixtures".
4. Three, 5-gallon samples of asphalt cement shall be obtained from the plant for asphalt cement used for the asphalt treated base and permeable asphalt treated base. The asphalt cement shall be sampled from the plant using AASHTO T40, "Sampling Bituminous Materials", after the asphalt cement has been heated for mixing.
5. A 55-gallon sample of the graded coarse and fine aggregate that is used for the asphalt treated base shall be obtained from the plant. This material shall be sampled in conformance with applicable portions of AASHTO T2, "Sampling Aggregates". For drum plants, the aggregates should be obtained from the charging (inclined) conveyor using the bypass chute, if possible. Otherwise, the sample should be taken from the belt on the charging conveyor. For batch plants, the aggregate can be sampled from the inclined conveyor at the dryer.
6. Uncompacted Asphalt Mix: Three, 5-gallon pails of the finished uncompacted mix shall be obtained from the asphalt treated base and the permeable asphalt treated base. The samples shall be obtained from the paver or the haul vehicle immediately prior to laydown. These materials shall be sampled in conformance with AASHTO T168, "Sampling Bituminous Paving Mixtures".

The containers (barrels and buckets) for the storage of the samples will be provided by the LTPP Materials Reference Library. These containers are of special manufacture to accommodate long-term storage. Containers shall be shipped by a suitable means as agreed upon by the FHWA-LTPP Regional Engineer.

5.9 Asphalt Cores for Asphalt Testing

Cores for asphalt testing are required at nine time periods. The first batch of cores shall be obtained immediately after the completion of the asphalt concrete surface. Thereafter, core shall be obtained during spring, summer or fall for pavement ages of 3, 6,

12 and 18 months and in the fall for pavement ages of 24, 48, 96 and 168 months. The cores shall be obtained from both sections, from the sampling area at the end of the test section.

Table 22 shows the time table for obtaining the cores. As shown in Figs. 13 and 14, twenty two cores shall be taken at each time interval over a pavement section 20 feet in length.

6.0 LOGS AND REPORTS

During field sampling operations, two types of forms must be completed. These are the Field Operations Information Forms and the Sampling Data Sheets. Field Operations Information Forms are used to record general information concerning the pavement test sections and the materials samples. Sampling Data Sheets are used to record the actual information for each sampling area or sampling location. If these forms are completed by a person other than the LTPP representative, the data must be reviewed by the LTPP representative prior to forwarding the sheets to the appropriate personnel. Further details are given in Section 3.3.13 (Ref. 4). Details on assembly and transmittal of data sheets are described in Section 3.3.16 (Reference 4).

7.0 HANDLING AND SHIPPING OF SAMPLES

Because of the research nature of this project and because samples will be shipped over long distances, it is extremely important that the samples be packaged carefully. All samples shall be shipped within five days to the laboratory designated by the participating highway agency. Sections 3.3.7, 3.3.8, 3.3.9, 3.3.10 and 3.3.11 in Reference 4 give detailed guidelines on packaging and shipping of samples.

8.0 SAMPLE STORAGE

The guidelines for storing materials from the LTPP experiment are described in Section 3.3.17 in Reference 4.

9.0 LABORATORY TESTING

The Protocols for laboratory testing on samples obtained for "Pavement Testing" are described in SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing (Reference 1). The applicable procedures for laboratory testing that are outlined in Section 4 of Reference 4 shall also be followed when performing laboratory tests. Specialized testing will be performed by the FHWA-LTPP contractor on the cores that are obtained for "Asphalt Testing".

10.0 REFERENCES

1. SHRP-LTPP Interim Guide for Laboratory Material Handling and Testing (PCC, Bituminous Materials, Aggregates and Soils), Operational Guide No. SHRP-LTPP-OG-004, Strategic Highway Research Program, Revised and Amended July 1993.
2. SHRP-LTPP Guide for Field Materials Sampling, Testing and Handling, Version 2.0, Operational Guide No. SHRP-LTPP-OG-006, Strategic Highway Research Program, May 1990.
3. Validation of SHRP Asphalt Specifications and Mix design and Innovations in Asphalt Pavements (SPS - 9), Materials Sampling and Testing Plan, Strategic Highway Research program, February 1993.
4. Specific Pavement Studies, Material Sampling and Testing Requirements for Experiment SPS-1, Strategic Study of Structural Factors for Flexible Pavements, Federal Highway Administration, LTPP Division, January 1994.

TABLE 1. LIMITS OF TEST SECTIONS – SPS9

Section Number	1000 ft. Test Section		500 ft. Monitoring Section	
	Beginning	End	Beginning	End
390901 ODOT	286+00 ✓	276+00 ✓	283+50 ✓	278+50 ✓
390903 ()	302+00 ✓	292+00 ✓	278+50 ✓	294+50 ✓
390902 SHRP	312+50 ✓	302+50 ✓	310+00 ✓	305+00 ✓

TABLE 2. DESIGN FEATURES OF TEST SECTIONS – SPS9 ✓

Test Section	AC Thickness (in) (Layer 1)	Material and Thickness (in) (Layer 2)	Material and Thickness (in) (Layer 3)	Material and Thickness (in) (Layer 4)
390901				
ODOT	4	ATB 12"	ATFDB 4"	AB 4"
SHRP	4	ATB 12	ATFDB 4"	AB 4"
390902				
SHRP	4	ATB 12"	ATFDB 4"	AB 4"

NOTE:

AC – Asphalt Concrete

ATB – Asphalt Treated Base

ATFDB – Asphalt Treated Free Drainage Base

AB – Aggregate Base

TABLE 3(A) MATERIAL SAMPLING REQUIREMENTS - SPS9

390902 390901 390902

Material Sample	Number of Samples		
	SHRP Section	Ohio DOT Section	Total
SUBGRADE			
Bulk Sample - From Compacted Surface, 400 lb per sample	1 ✓	missed 1	2 1
Moisture Content Samples	1 ✓	missed 1	2 1
Thin-wall Tube Samples (If thin-wall tube samples cannot be obtained, obtain split-spoon samples, At each location 2 tubes or 2 spoons or combination per hole)	3 Locations (6 tubes) 5 tubes	3 Locations ✓(6 tubes)	6 Locations (12 tubes) 11 tubes
EMBANKMENT	No Emb		
Bulk Sample - From Compacted Surface, 400 lb per sample	1 ✓	1 ✓	2 1
Moisture Content Samples	1 ✓	1 ✓	2 1
AGGREGATE BASE			
Bulk Samples from Compacted Surface, 400 lb per sample	1 ✓	1 ✓	2 ✓
Moisture Content Samples	1 ✓	1 ✓	2 ✓
PERMEABLE ASPHALT TREATED BASE			
Bulk Samples - Uncompacted, 100 lb per sample	1 ✓	1 ✓	2 ✓
ASPHALT TREATED BASE			
Cores - 4 inch diameter	7 34	7 8	14 50
Bulk Samples - Uncompacted, 200 lb per sample	1 ✓	1 ✓	2 ✓
ASPHALT CONCRETE			
Cores - 4 inch diameter	7 34	7 8	14 50
Bulk Samples - uncompacted, 200 lb per sample:			
Intermediate Course	1 4	1 2	2 8
Surface Course	1 4	1 2	2 8
Asphalt Cement used for Asphalt Concrete - 5 gallon samples	1 ✓	1 ✓	2 3

TABLE 3(B) SAMPLES FOR MATERIALS REFERENCE LIBRARY - SPS9

Material Sample
<p>The Following Samples Shall be Obtained From the SHRP Mix as well as the State Mix</p> <p>ASPHALT CEMENT (Used in the Asphalt Concrete Mix): 55 gal from the Plant from that used for State Mix and SHRP Mix</p> <p>AGGREGATE (Combined Coarse and Fine Aggregate): 1000 lb from the plant. Obtain samples for both intermediate and surface course mixes, from both State Mix and SHRP Mix</p> <p>Finished Asphalt Concrete Mix (From Surface and Intermediate Course): 200 lb from the paver or the haul vehicle, obtain samples from the State mix and the SHRP mix</p> <p>In addition the following samples shall be obtained:</p> <p>Asphalt Cement - Three, five-gallon samples of the asphalt cement used for the asphalt treated base and the permeable asphalt treated base layer</p> <p>Graded Coarse and Fine Aggregate - One fifty five gallon drum of the graded coarse and fine aggregate from that used for Asphalt Treated Base</p> <p>Uncompacted Asphalt Mix - Three, five-gallon pails of the uncompacted mix from each of the following: Asphalt Treated Base and Asphalt Treat Free Drainage Base</p>

TABLE 4. SUMMARY OF FIELD TESTS ON EACH LAYER – SPS9

Layer and Test/Measurement	Number of Locations	SHRP Protocol
SUBGRADE		
Density and Moisture Tests (Nuclear Gauge)	87	Section 3.3.14, Reference 4
Shoulder Probes (20 ft) to Detect Rigid Layer	2 ✓	Section 3.8, Reference 2
* <i>No elevation for 390903</i> Elevation Measurements	130 ✓	—
Falling Weight Deflectometer Tests	5075	P59
EMBANKMENT		
Density and Moisture Tests (Nuclear Gauge)	84	Section 3.3.14, Reference 4
* Elevation Measurements	130 ✓	—
Falling Weight Deflectometer Tests	5075	P59
DENSE GRADED AGGREGATE BASE		
Density and Moisture Tests (Nuclear Gauge)	811	Section 3.3.14, Reference 4
* Elevation Measurements	130 ✓	—
Falling Weight Deflectometer Tests	5075 ✓	P59
PERMEABLE ASPHALT TREATED BASE		
* Elevation Measurements	130 ✓	—
Falling Weight Deflectometer Tests	5075 ✓	P59
ASPHALT TREATED BASE		
Density Tests (Nuclear Gauge)	89 ✓	Section 3.3.14, Reference 4
* Elevation Measurements	130 ✓	—
Falling Weight Deflectometer Tests	5075 ✓	P59
ASPHALT SURFACE		
Density Tests (Nuclear Gauge) Note: Perform Tests on intermediate course and surface course	89 ✓	Section 3.3.14, Reference 4
* Elevation Measurements Note: Perform measurements after completion of surface course	130 ✓	

Do not have results back yet

TABLE 5. LABORATORY MATERIALS TESTING PLAN FOR EACH LAYER – SPS9

Test	SHRP Test Designation	SHRP Protocol	No. of Tests	Test Conducted by:	
				State	FHWA
SUBGRADE					
Sieve Analysis	SS01	P51	2	–	X
Hydrometer to 0.001mm	SS02	P42	2	–	X
Atterberg Limits	SS03	P43	2	–	X
Classification – Bulk samples	SS04	P52	2	–	X
Classification – Thin wall (visual manual only)	SS04	P52	9	X (7)	X (2)
Moisture–Density Relations	SS05	P55	2	–	X
Resilient Modulus (Thin wall tubes)	SS07	P46	2	–	X
Conduct test on bulk sample if thin wall tubes are not available					
Unit Weight	SS08	P56	3	X	–
Natural Moisture Content	SS09	P49	2	–	X
Unconfined Comp. Strength	SS10	P54	3	X	–
Permeability (thin – wall tube)	SS11	P57	1	X	–
Note: If thin wall tubes are not available conduct test UG09, Protocol P48 using Bulk samples					
EMBANKMENT					
Sieve Analysis	SS01	P51	2	–	X
Hydrometer to 0.001mm	SS02	P42	2	–	X
Atterberg Limits	SS03	P43	2	–	X
Classification – Bulk samples	SS04	P52	2	–	X
Moisture–Density Relations	SS05	P55	2	–	X
Resilient Modulus	UG07	P46	2	–	X
Natural Moisture Content	SS09	P49	2	–	X
Permeability	UG09	P57	2	X	–
DENSE GRADED AGGREGATE BASE					
Particle Size Analysis	UG01	P41	2	–	X
Sieve Analysis (washed)	UG02	P41	2	–	X
Atterberg Limits	UG04	P43	2	–	X
Moisture–Density Relations	UG05	P44	2	–	X
Resilient Modulus	UG07	P46	2	–	X
Classification	UG08	P47	2	–	X
Permeability	UG09	P48	2	X	–
Natural Moisture Content	UG10	P49	2	–	X
ASPHALT TREATED FREE DRAINAGE BASE					
Asphalt Content (Extraction)	AC04	P04	2	X	–
Extracted Aggregate – Gradation	AG04	P14	2	X	–
ASPHALT TREATED BASE					
Core Examination/Thickness	AC01	P01	14	–	X
Bulk Specific Gravity	AC02	P02	14	–	X
Maximum Specific Gravity	AC03	P03	2	X	–
Asphalt Content (Extraction)	AC04	P04	2	X	–
Moisture Susceptibility	AC05	P05	2	X	–
Resilient Modulus	AC07	P07	6	–	X
Tensile Strength	AC07	P07	8	–	X

Do not have results back yet

TABLE 5. LABORATORY MATERIALS TESTING PLAN FOR EACH LAYER (CONTINUED) – SPS9

Test	SHRP Test Designation	SHRP Protocol	No. of Tests	Test Conducted by:	
				State	FHWA
ASPHALT TREATED BASE (CONTINUED)					
Asphalt Cement Recovered					
Abson Recovery	AE01	P21	2	X	—
Penetration at 77F, 115F	AE02	P22	2	X	—
Specific Gravity (60F)	AE03	P23	2	X	—
Viscosity at 77F	AE04	P24	2	X	—
Viscosity at 140F, 275F	AE05	P25	2	X	—
Extracted Aggregate					
Specific Gravity — Coarse Aggregate	AG01	P11	2	X	—
Specific Gravity — Fine Aggregate	AG02	P12	2	X	—
Gradation of Aggregate	AG04	P14	2	X	—
NAA Test for Fine Aggregate	AG05	P14A	2	X	—
ASPHALT CONCRETE					
Core Examination/Thickness	AC01	P01	14	—	X
Bulk Specific Gravity	AC02	P02	28	—	X
Maximum Specific Gravity	AC03	P03	4	X	—
Asphalt Content (Extraction)	AC04	P04	4	X	—
Moisture Susceptibility	AC05	P05	4	X	—
Creep Modulus	AC06	P06	6	—	X
Resilient Modulus	AC07	P07	6	—	X
Tensile Strength	AC07	P07	8	—	X
Asphalt Cement (Extracted)					
Abson Recovery	AE01	P21	4	X	—
Penetration at 77F and 115F	AE02	P22	4	X	—
Specific Gravity (60F)	AE03	P23	4	X	—
Viscosity at 77F	AE04	P24	4	X	—
Viscosity at 140F, 275F	AE05	P25	4	X	—
Extracted Aggregate					
Specific Gravity — Coarse Agg.	AG01	P11	4	X	—
Specific Gravity — Fine Agg.	AG02	P12	4	X	—
Gradation of Aggregate	AG05	P14	4	X	—
NAA Test for Fine Aggregate	AG05	P14A	4	X	—
Asphalt Cement: (From Tanker)					
Penetration at 77F, 115F	AE02	P22	2	X	—
Specific Gravity (60F)	AE03	P23	2	X	—
Viscosity at 77F	AE04	P24	2	X	—
Viscosity at 140F, 275F	AE05	P25	2	X	—

TABLE 6 LOCATIONS FOR BULK SAMPLES AND MOISTURE
SAMPLES FROM PREPARED SUBGRADE, EMBANKMENT
AND AGGREGATE BASE

Sample Designation	Associated Monitoring Section	Layer	Sampling Location	Offset from Center Line of Pavement (ft)	
S9B1	ODOT	Subgrade	278+00	6	Missed
390902 S9B2 ✓	SHRP ✓	Subgrade ✓	304+49.50 ✓	6 ✓	
S9B3 ✓	901 ODOT	Embankment	277+99.278+00	6	
No Emb. → S9B4	902 SHRP	Embankment	304+49.50	6	
S9B5 ✓	901 ODOT	Aggregate Base	277+99.284+00 ✓	6 ✓	
S9B6 ✓	902 SHRP	Aggregate Base	304+49.50 ✓	6 ✓	

No bulk samples taken in 390903

TABLE 7 LOCATIONS FOR SHELBY TUBE SAMPLING
FROM SUBGRADE - SPS 9

Sample Designation	Section Number	Sampling Location	Offset from Center Line of Pavement (ft)
S9A1 ✓	901 ODOT	279+50 ✓	4 ✓
S9A2 ✓	901 ODOT	281+00 ✓	4 ✓
S9A3 ✓	901 ODOT	282+50.52 ✓	4 ✓
S9A4 ✓	902 SHRP	306+00 ✓	46 ✓
S9A5 ✓	902 SHRP	307+50 ✓	46 ✓
S9A6 ✓	902 SHRP	309+00 ✓	46 ✓

No tubes taken in 390903

TABLE 8. FIELD AND LABORATORY TEST PLAN FOR SUBGRADE – SPS9

Test	SHRP Test Designation	SHRP Protocol	Number of Tests	Material Source/ Test Location	Test Conducted by:	
					State	FHWA
FIELD TESTS						
In-Place Density & Moisture	—	Section 3.3.14 Reference 4	8 7	T1-T8	X	—
Depth to Rigid Layer	—	Section 3.8 Reference 2	2 ✓	S1-S2	X	—
Elevation Measurements	—	Section 5.2.2 of this Report	65 per Section	See Section 5.2.2 and Table 10 of this Report	X	—
FWD Testing	—	P59	25 per Section	See Section 5.2.2 and Table 12 of this Report	X	—
LABORATORY TESTS <i>All results not back yet</i>						
Sieve Analysis	SS01	P51	2	B1-B2	—	X
Hydrometer to 0.001mm	SS02	P42	2	B1-B2	—	X
Atterberg Limits	SS03	P43	2	B1-B2	—	X
Classification	SS04	P52	2	B1-B2	—	X
			9	A1-A9 ---- NOTE 1	X (7)	X (2)
Moisture-Density Relations	SS05	P55	2	B1-B2	—	X
Resilient Modulus	SS07	P46	2	A1, A4 ---- NOTE 2	—	X
Unit Weight	SS08	P56	3	A2, A3, A6	X	—
Natural Moisture Content	SS09	P49	2	B1-B2	—	X
Unconfined Comp. Strength	SS10	P54	3	A2, A3, A6	X	—
Permeability	SS11	P57	1	A5 ---- NOTE 3	X	—
NOTE 1: Visual-manual Classification Only NOTE 2: Use bulk samples (B1-B2) if thin-wall tubes are not available NOTE 3: If thin-wall tubes are not available, perform permeability test using bulk samples and Test designation UG09, Protocol P48						



TABLE 9 LOCATIONS FOR IN-PLACE DENSITY AND
MOISTURE TESTS ON PREPARED SUBGRADE,
EMBANKMENT AND AGGREGATE BASE - SPS 9

Test Location Designation	Associated Section Number	Layer	Station	Offset from Center Line of Pavement (ft)
S9T1*	ODOT	Subgrade	278+00	6
S9T2	ODOT	Subgrade	279+50	8
S9T3	ODOT	Subgrade	281+00	8
S9T4	ODOT	Subgrade	282+50	8
S9T5* ✓	902 SHRP ✓	Subgrade ✓	304+49.50 ✓	6 ✓
S9T6 ✓	902 SHRP ✓	Subgrade ✓	306+00 ✓	8 ✓
S9T7 ✓	902 SHRP ✓	Subgrade ✓	307+50 ✓	8 ✓
S9T8 ✓	902 SHRP ✓	Subgrade ✓	309+00 ✓	8 ✓
S9T9* ✓	901 ODOT ✓	Embankment ✓	277+99 ✓	6 ✓
S9T10 ✓	901 ODOT ✓	Embankment ✓	279+50 ✓	6 ✓
S9T11 ✓	901 ODOT ✓	Embankment ✓	281+00 ✓	6 ✓
S9T12 ✓	901 ODOT ✓	Embankment ✓	282+50 ✓	6 ✓
S9T13*	902 SHRP	Embankment	304+49	6
S9T14	902 SHRP	Embankment	306+00	6
S9T15	902 SHRP	Embankment	307+50	6
S9T16	902 SHRP	Embankment	309+00	6
S9T17* ✓	901 ODOT ✓	Aggregate Base ✓	277+99 ✓	6 ✓
S9T18 ✓	901 ODOT ✓	Aggregate Base ✓	279+50 ✓	6 ✓
S9T19 ✓	901 ODOT ✓	Aggregate Base ✓	281+00 ✓	6 ✓
S9T20 ✓	901 ODOT ✓	Aggregate Base ✓	282+50 ✓	6 ✓
S9T21* ✓	902 SHRP ✓	Aggregate Base ✓	304+49.50 ✓	6 ✓
S9T22 ✓	902 SHRP ✓	Aggregate Base ✓	306+00 ✓	6 ✓
S9T23 ✓	902 SHRP ✓	Aggregate Base ✓	307+50 ✓	6 ✓
S9T24 ✓	902 SHRP ✓	Aggregate Base ✓	309+00 ✓	6 ✓

* - Bulk Sampling Locations

Location	Test Section	Layer	Station	Offset from Center Line
T 38	390903	Subgrade	295+50	6
T 39	390903	Subgrade	297+00	6
T 40	390903	Subgrade	298+50	6
None		Embankment		
T 46	390903	Agg Base	295+75	6
T 47	390903	Agg Base	297+00	6
T 48	390903	Agg Base	298+50	6

TABLE 10 LOCATIONS FOR ELEVATION MEASUREMENTS – SPS9

Section Number	Station	Offset from Center Line of Pavement (feet)				
		0	3	6	9	12
 ODOT 390901	278+25	0	3	6	9	12
	278+50	0	3	6	9	12
	279+00	0	3	6	9	12
	279+50	0	3	6	9	12
	280+00	0	3	6	9	12
	280+50	0	3	6	9	12
	281+00	0	3	6	9	12
	281+50	0	3	6	9	12
	282+00	0	3	6	9	12
	282+50	0	3	6	9	12
	283+00	0	3	6	9	12
	283+50	0	3	6	9	12
	283+75	0	3	6	9	12
 390111 390902	304+75	0	3	6	9	12
	305+00	0	3	6	9	12
	305+50	0	3	6	9	12
	306+00	0	3	6	9	12
	306+50	0	3	6	9	12
	307+00	0	3	6	9	12
	307+50	0	3	6	9	12
	308+00	0	3	6	9	12
	308+50	0	3	6	9	12
	309+00	0	3	6	9	12
	309+50	0	3	6	9	12
	310+00	0	3	6	9	12
	310+25	0	3	6	9	12

No Elevation data for 390903

TABLE 11 LOCATIONS FOR 20 FT SHOULDER
PROBES – SPS9

Probe Location Designation	Monitoring Section Number	Test Location
S9S1 ✓	901 ODOT	281+00
S9S2 ✓	902 SHRP	307+50



TABLE 12 LOCATIONS FOR FWD TESTS – SPS9

Section Number	Station for FWD Testing	
	Offset from Center Line of Pavement	
	9.5 +/- 0.5 ft (Outer Wheel Path)	6 +/- 0.5 ft (Mid Lane)
ODOT 390901	278+25	278+25
	278+50	278+75
	279+00	279+25
	279+50	279+75
	280+00	280+25
	280+50	280+75
	281+00	281+25
	281+50	281+75
	282+00	282+25
	282+50	282+75
	283+00	283+25
	283+50	283+75
	283+75	—
SHRP 390902	304+75	304+75
	305+00	305+25
	305+50	305+75
	306+00	306+25
	306+50	306+75
	307+00	307+25
	307+50	307+75
	308+00	308+25
	308+50	308+75
	309+00	309+25
	309+50	309+75
	310+00	310+25
	310+25	310+75
390903	294+25	294+25
	294+50	294+75
	295+00	295+25
	295+50	295+75
	296+00	296+25
	296+50	296+75
	297+00	297+25
	297+50	297+75
	298+00	298+25
	298+50	298+75
	299+00	299+25
	299+50	299+75
	299+75	—

I have not seen
the data files
but these locations
should be accurate

TABLE 13. FIELD AND LABORATORY TEST PLAN FOR EMBANKMENT – SPS9

Test	SHRP Test Designation	SHRP Protocol	Number of Tests	Material Source/ Test Location	Test Conducted by:	
					State	FHWA
FIELD TESTS						
In-Place Density & Moisture	—	Section 3.3.14 Reference 4	84	T9-T16 T9-T12	X	—
Elevation Measurements	—	Section 5.3.2 of this Report	65 per Section	See Section 5.3.2 and Table 10 of this Report	X	—
FWD Testing	—	P59	25 per Section	See Section 5.3.2 and Table 12 of this Report	X	—
LABORATORY TESTS No data yet						
Sieve Analysis	SS01	P51	2	B3-B4	—	X
Hydrometer to 0.001mm	SS02	P42	2	B3-B4	—	X
Atterberg Limits	SS03	P43	2	B3-B4	—	X
Classification	SS04	P52	2	B3-B4	—	X
Moisture-Density Relations	SS05	P55	2	B3-B4	—	X
Resilient Modulus	SS07	P46	2	B3-B4	—	X
Natural Moisture Content	SS09	P49	2	B3-B4	—	X
Permeability	UG09	P48	2	B3-B4	X	—

TABLE 14. FIELD AND LABORATORY TEST PLAN FOR DENSE GRADED AGGREGATE BASE MATERIALS – SPS9

Test	SHRP Test Designation	SHRP Protocol	No. of Tests	Material Source/ Test Location	Test Conducted by:	
					State	FHWA
FIELD TESTS						
In-Place Density & Moisture	—	Section 3.3.14 Reference 4	8 11	T17 – T24 + T46 – T48	X	—
Elevation Measurements	—	Section 5.4.2 of this report	65 per Section	See Section 5.4.2 and Table 10 of this Report	X	—
FWD Testing	—	P59	25 per Section	See Section 5.4.2 and Table 12 of this Report	X	—
LABORATORY TESTS No data yet						
Particle Size Analysis	UG01	P41	2	B5 – B6	—	X
Sieve Analysis (washed)	UG02	P41	2	B5 – B6	—	X
Atterberg Limits	UG04	P43	2	B5 – B6	—	X
Moisture – Density Relations	UG05	P44	2	B5 – B6	—	X
Resilient Modulus	UG07	P46	2	B5 – B6	—	X
Classification	UG08	P47	2	B5 – B6	—	X
Permeability	UG09	P48	2	B5 – B6	X	—
Natural Moisture Content	UG10	P49	2	B5 – B6	—	X

TABLE 15 LOCATIONS FOR BULK SAMPLING OF ASPHALT TREATED
FREE DRAINAGE BASE MATERIAL (ATFDB) AND
ASPHALT TREATED BASE (ATB) MATERIAL – SPS9

Sample Designation (NOTE 1)	Station	Material	Associated Section
S9B7 ✓	281+00 ✓	ATFDB ✓	901 ODOT
S9B8 ✓	307+50 ✓	ATFDB ✓	902 SHRP
S9B9 ✓	281+00 ✓	ATB ✓	901 ODOT
S9B10 ✓	307+50 ✓	ATB ✓	902 SHRP
NOTE 1: Sample from the paver or the haul vehicle for the mix to be placed at the specified locations.			

No bulk samples of ATFDB + ATB in 390903

TABLE 16. FIELD AND LABORATORY TEST PLAN FOR ASPHALT TREATED FREE DRAINAGE BASE (ATFDB)– SPS 9

Test	SHRP Test Designation	SHRP Protocol	Number of Tests	Material Source/ Test Location	Test Conducted by:	
					State	FHWA
FIELD TESTS						
Elevation Measurements	—	See Section 5.5.2 of this Report	65 per Section	See Section 5.5.2 and Table 10 of this Report	X	—
Falling Weight Deflectometer Tests	—	P59	25 per Section	See Section 5.5.2 and Table 12 of this Report	X	—
LABORATORY TESTS <i>No data set</i>						
Asphalt Content (Extraction)	AC04	P04	2 ✓	B7, B8	X	—
Extracted Aggregate						
Gradation of Aggregate	AG05	P14	2 ✓	B7, B8	X	—

Table 17. Locations for Cores from A15 and AC (Time Interval A)

Core Number	SHRP Section	Sample location Designator	Core Sample number (AL=CA, ATB=CT)	Station (Project)	Station (SHRP)	Offset from Ck (ft)
C1	390901	C01A01	CA01A01 CT01A01	285+45	0-195	9.7
C2	390901	C02A01	CA02A01 CT02A01	285+45	0-195	2.4
C3	390901	C03A01	CA03A01 CT03A01	285+30	0-180	2.4
C4	390901	C04A01	CA04A01 CT04A01	285+30	0-180	9.7
C5	390901	C05A01	CA05A01 CT05A01	277+95	5+55	9.7
C6	390901	C06A01	CA06A01 CT06A01	277+95	5+55	2.4
C7	390901	C07A01	CA07A01 CT07A01	277+80	5+70	2.4
C8	390901	C08A01	CA08A01 CT08A01	277+80	5+70	9.7
C1	390903	C01A03	CA01A03 CT01A03	301+45	0-195	9.7
C2	390903	C02A03	CA02A03 CT02A03	301+45	0-195	2.4
C3	390903	C03A03	CA03A03 CT03A03	301+30	0-180	2.4
C4	390903	C04A03	CA04A03 CT04A03	301+30	0-180	9.7
C5	390903	C05A03	CA05A03 CT05A03	293+95	5+55	9.7
C6	390903	C06A03	CA06A03 CT06A03	293+95	5+55	2.4
C7	390903	C07A03	CA07A03 CT07A03	293+80	5+70	2.4
C8	390903	C08A03	CA08A03 CT08A03	293+80	5+70	9.7
C1	390902	C01A02	CA01A02 CT01A02	311+97.5	0-197.5	10.3
C2	390902	C02A02	CA02A02 CT02A02	311+97.5	0-197.5	5.4
C3	390902	C03A02	CA03A02 CT03A02	311+95	0-195	1.8
C4	390902	C04A02	CA04A02 CT04A02	311+95	0-195	8.75
C5	390902	C05A02	CA05A02 CT05A02	311+92.5	0-192.5	10.3
C6	390902	C06A02	CA06A02 CT06A02	311+92.5	0-192.5	5.4
C7	390902	C07A02	CA07A02 CT07A02	311+90	0-190	1.8
C8	390902	C08A02	CA08A02 CT08A02	311+90	0-190	8.75
C9	390902	C09A02	CA09A02 CT09A02	311+87.5	0-187.5	10.3
C10	390902	C10A02	CA10A02 CT10A02	311+87.5	0-187.5	5.4
C11	390902	C11A02	CA11A02 CT11A02	311+85	0-185	1.8
C12	390902	C12A02	CA12A02 CT12A02	311+85	0-185	8.75
C13	390902	C13A02	CA13A02 CT13A02	311+82.5	0-182.5	10.3
C14	390902	C14A02	CA14A02 CT14A02	311+82.5	0-182.5	5.4
C15	390902	C15A02	CA15A02 CT15A02	311+80	0-180	1.8
C16	390902	C16A02	CA16A02 CT16A02	311+80	0-180	8.75
C17	390902	C17A02	CA17A02 CT17A02	311+77.5	0-177.5	10.3
C18	390902	C18A02	CA18A02 CT18A02	304+47.5	5+52.5	10.3
C19	390902	C19A02	CA19A02 CT19A02	304+47.5	5+52.5	5.4
C20	390902	C20A02	CA20A02 CT20A02	304+45	5+55	1.8
C21	390902	C21A02	CA21A02 CT21A02	304+45	5+55	8.75
C22	390902	C22A02	CA22A02 CT22A02	304+42.5	5+57.5	10.3
C23	390902	C23A02	CA23A02 CT23A02	304+42.5	5+57.5	5.4
C24	390902	C24A02	CA24A02 CT24A02	304+40	5+60	1.8
C25	390902	C25A02	CA25A02 CT25A02	304+40	5+60	8.75
C26	390902	C26A02	CA26A02 CT26A02	304+37.5	5+62.5	10.3
C27	390902	C27A02	CA27A02 CT27A02	304+37.5	5+62.5	5.4
C28	390902	C28A02	CA28A02 CT28A02	304+35	5+65	1.8
C29	390902	C29A02	CA29A02 CT29A02	304+35	5+65	8.75
C30	390902	C30A02	CA30A02 CT30A02	304+32.5	5+67.5	10.3
C31	390902	C31A02	CA31A02 CT31A02	304+32.5	5+67.5	5.4
C32	390902	C32A02	CA32A02 CT32A02	304+30	5+70	1.8
C33	390902	C33A02	CA33A02 CT33A02	304+30	5+70	8.75
C34	390902	C34A02	CA34A02 CT34A02	304+27.5	5+72.5	10.3

TABLE 17 LOCATIONS FOR CORES FROM ASPHALT
TREATED BASE AND ASPHALT CONCRETE – SPS9

Core Number	Station for Core	Reference Section	Offset from Center Line of Pavement (ft)	Core from ATB ?
S9C1	278+25	ODOT	4.5	No
S9C2	278+25	ODOT	6	Yes
S9C3	278+25	ODOT	7.5	Yes
S9C4	278+25	ODOT	9	Yes
S9C5	283+75	ODOT	6	Yes
S9C6	283+75	ODOT	7.5	Yes
S9C7	283+75	ODOT	9	Yes
S9C8	304+75	SHRP	4.5	No
S9C9	304+75	SHRP	6	Yes
S9C10	304+75	SHRP	7.5	Yes
S9C11	304+75	SHRP	9	Yes
S9C12	310+25	SHRP	6	Yes
S9C13	310+25	SHRP	7.5	Yes
S9C14	310+25	SHRP	9	Yes
NOTE: Obtain ATB cores when obtaining cores from the asphalt concrete surface				

Changed

TABLE 18. FIELD AND LABORATORY TEST PLAN FOR ASPHALT TREATED BASE – SPS9

Test	SHRP Test Designation	SHRP Protocol	No. of Tests	Material Source/ Test Location	Test Conducted by:	
					State	FHWA
FIELD TESTS						
Nuclear Density Tests	–	Section 3.3.14 Reference 4	6	T25 – T30	X	–
Elevation Measurements	–	See Section 5.6.2 of this Report	65 per Section	See Section 5.6.2 and Table 10 of this Report	X	–
Falling Weight Deflectometer Tests	–	See Section 5.6.2 of this Report	25 per Section	See Section 5.6.2 and Table 12 of this Report	X	–
LABORATORY TESTS						
Core Examination/Thickness	AC01	P01	12	C2–C7, C9–C14	–	X
Bulk Specific Gravity	AC02	P02	12	C2–C7, C9–C14	–	X
Maximum Specific Gravity	AC03	P03	2	B9, B10	X	–
Asphalt Content (Extraction)	AC04	P04	2	B9, B10	X	–
Moisture Susceptibility	AC05	P05	2	B9, B10	X	–
Resilient Modulus	AC07	P07	6	(C1–C3), (C8 – C10)	–	X
Tensile Strength	AC07	P07	8	(C1–C4), (C8 – C11)	–	X
Extracted Aggregate						
Specific Gravity – Coarse Agg.	AG01	P11	2	B9, B10	X	–
Specific Gravity – Fine Agg.	AG02	P12	2	B9, B10	X	–
Gradation of Aggregate	AG04	P14	2	B9, B10	X	–
NAA Test for Fine Aggregatae	AG05	P14A	2	B9, B10	X	–
Asphalt Cement (Extracted)						
Abson Recovery	AE01	P21	2	B9, B10	X	–
Penetration at 77°F, 115°F	AE02	P22	2	B9, B10	X	–
Specific Gravity (60°F)	AE03	P23	2	B9, B10	X	–
Viscosity at 77°F	AE04	P24	2	B9, B10	X	–
Viscosity at 140°F, 275°F	AE05	P25	2	B9, B10	X	–

TABLE 19 LOCATIONS FOR IN-PLACE DENSITY TESTS ON
PREPARED ASPHALT TREATED BASE AND ASPHALT CONCRETE – SPS 9

Test Location Designation	Associated Section Number	Layer	Station	Offset from Center Line of Pavement (ft)
✓ S9T25	ODOT	ATB	279+50 ✓	6 ✓
✓ S9T26	901 ✓	ATB ✓	281+00 ✓	6 ✓
✓ S9T27		ATB	282+50 ✓	6 ✓
✓ S9T28 ✓	SHRP	ATB	306+00 ✓	6 ✓
✓ S9T29	902 ✓	ATB ✓	307+50 ✓	6 ✓
✓ S9T30		ATB	309+00 ✓	6 ✓
✓ S9T31 L,S	ODOT	AC	279+50 ✓	6 ✓
✓ S9T32 L,S	401 ✓	AC ✓	281+00 ✓	6 ✓
✓ S9T33 L,S		AC	282+50 ✓	6 ✓
✓ S9T34 L,S	SHRP	AC	306+00 ✓	6 ✓
✓ S9T35 L,S	902 ✓	AC ✓	307+50 ✓	6 ✓
✓ S9T36 L,S		AC	309+00 ✓	6 ✓
NOTE: Perform Nuclear Density Tests on Asphalt Concrete after the Completion of the Intermediate Course as well as the Surface Course				
T49	390903	ATB	295+50	6
T50		ATB	297+00	6
T51		ATB	298+50	6
T52 L,S	390903	AC	295+50	6
T53 L,S		AC	297+00	6
T54 L,S		AC	298+50	6

See attached

TABLE 20. LOCATIONS FOR BULK SAMPLING OF ASPHALT CONCRETE AND ASPHALT CEMENT – SPS 9

Asphalt Concrete Sampling Location (Note 1)	Station	Reference Monitoring Section	Bulk Asphalt Concrete Sample Designation (See Note 1)	Asphalt Cement Sample Designation (see Note 2)
S9B11	281+00	ODOT	B11S, B11I	AC-01
S9B12	307+50	SHRP	B12S, B12I	AC-02
<p>NOTE 1: Take samples of uncompacted asphalt concrete from the haul vehicle for the mix to be placed at the given locations. Samples shall be obtained from the intermediate course and surface course. at the specified locations. Samples from the intermediate course shall have the suffix "I" after the sample number while samples from the surface course shall have the suffix "S" after the sample number.</p> <p>NOTE 2: Obtain from the plant a 5-gallon sample of asphalt cement used in the asphalt concrete mix that is placed at the specified location.</p>				

Table 20. Locations For Bulk Sampling of Asphalt Concrete and Cement

SHRP Section	Sample Location Designator	Bulk Sample Number	(I) Intermediate or (S) Surface Course	Stations Project SHRP	(P) Performance or (QC) Quality Control Testing of sample
390901	B07A01	BA01A01	I	283+75 0-25	QC
390901	B08A01	BA02A01	I	278+25 5+25	QC
390901	B07A01	BA03A01	S	283+75 0-25	QC
390901	B08A01	BA04A01	S	278+25 5+25	QC
390903	B05A03	BA01A03	I	299+75 0-25	QC
390903	B06A03	BA02A03	I	294+25 5+25	QC
390903	B05A03	BA03A03	S	299+75 0-25	QC
390903	B06A03	BA04A03	S	294+25 5+25	QC
390902	B01A02	BA01A02	I	310+25 0-25	QC
390902	B02A02	BA02A02	I	308+50 1+50	P
390902	B03A02	BA03A02	I	306+50 3+50	P
390902	B04A02	BA04A02	I	304+75 5+25	QC
390902	B01A02	BA05A02	S	310+25 0-25	QC
390902	B02A02	BA06A02	S	308+50 1+50	P
390902	B03A02	BA07A02	S	306+50 3+50	P
390902	B04A02	BA08A02	S	304+75 5+25	QC

Note - 3-5 gal samples of asphalt cement were obtained representing each of the sections
 390901 - AC-20
 390903 - PG 64/28
 390902 - PG 58/28

Scope of testing has changed
Results not back yet to confirm

TABLE 21. FIELD AND LABORATORY TEST PLAN FOR ASPHALT CONCRETE – SPS9

Test	SHRP Test Designation	SHRP Protocol	No. of Tests	Material Source/ Test Location	Test Conducted by	
					State	FHWA
FIELD TESTS						
Nuclear Density Tests	–	Section 3.3.14 Reference 4	6	T31 – T36 (Tests conducted on both the Intermediate and Surface Course) <i>also T52 – T54</i>	X	–
Elevation Measurements	–	See Section 5.7.2 of this Report	55 per Section	See Section 5.7.2 and Table 10 of this Report	X	–
LABORATORY TESTS						
Core Examination/Thickness	AC01	P01	14	C1–C14	–	X
Bulk Specific Gravity	AC02	P02	28	C1–C14 (When cores are sawed to separate Intermediate and surface courses, there will be 28 samples)	–	X
Maximum Specific Gravity	AC03	P03	4	B–11I, B–11S, B–12I, B12–S NOTE 1	X	–
Asphalt Content (Extraction)	AC04	P04	4	B–11I, B–11S, B–12I, B12–S NOTE 1	X	
Moisture Susceptibility	AC05	P05	4	B–11I, B–11S, B–12I, B12–S NOTE 1	X	–
Creep Modulus (NOTE 1)	AC06	P06	6	C5 (C5I, C5S), C7 (C7I, C7S), C12(C12I, C12S)	–	X
Resilient Modulus (NOTE 1)	AC07	P07	6	C1–C3 (C1I, C2I, C3I, C1S, C2S, C3S)	–	X
				C8–C10 (C8I, C9I, C10I, C8S, C9S, C10S).... NOTE 2		
Tensile Strength (NOTE 1)	AC07	P07	8	C1–C4 (C1I, C2I, C3I, C4I, C1S, C2S, C3S, C4S)	–	X
				C8–C11 (C8I, C9I, C10I, C11I, C8S, C9S, C10S, C11S) –NOTE 2		
Extracted Aggregate						
Specific Gravity – Coarse Agg.	AG01	P11	4	B–11I, B–11S, B–12I, B–12S NOTE 1	X	–
Specific Gravity – Fine Agg.	AG02	P12	4	B–11I, B–11S, B–12I, B–12S NOTE 1	X	–
Gradation of Aggregate	AG05	P14	4	B–11I, B–11S, B–12I, B–12S NOTE 1	X	–
NAA Test for Fine Aggregate	AG05	P14A	4	B–11I, B–11S, B–12I, B–12S NOTE 1	X	–

Scope of testing has changed
Results not back yet to confirm

TABLE 21. FIELD AND LABORATORY TEST PLAN FOR ASPHALT CONCRETE – SPS9 (CONTINUED)

Test	SHRP Test Designation	SHRP Protocol	No. of Tests	Material Source/ Test Location	Test Conducted by	
					State	FHWA
Asphalt Cement						
Abson Recovery	AE01	P21	4	B-11I, B-11S, B-12I, B-12S NOTE 1	X	-
Penetration at 77°F, 115°F	AE02	P22	4	B-11I, B-11S, B-12I, B-12S NOTE 1	X	-
Specific Gravity (60°F)	AE03	P23	4	B-11I, B-11S, B-12I, B-12S NOTE 1	X	-
Viscosity at 77°F	AE04	P24	4	B-11I, B-11S, B-12I, B-12S NOTE 1	X	-
Viscosity at 140°F, 275°F	AE05	P25	4	B-11I, B-11S, B-12I, B-12S NOTE 1	X	-
Asphalt Cement (From Plant)						
Penetration at 77°F, 115°F	AE02	P22	2	AC-01, AC-02	X	-
Specific Gravity (60°F)	AE03	P23	2	AC-01, AC-02	X	-
Viscosity at 77F	AE04	P24	2	AC-01, AC-02	X	-
Viscosity at 140°F, 275°F	AE05	P25	3	AC-01, AC-02, AC-03	X	-
NOTE 1: Suffix 'S' denotes Surface Course and suffix 'I' denotes Intermediate Course NOTE 2. Each asphalt concrete core contains two layers, Intermediate course and surface course. The suffix 'I' in a sample refers to the intermediate course while the suffix 'S' refers to the surface course.						

changed

TABLE 22. SAMPLING TIMES OF CORES FOR ASPHALT TESTING

Time Period	Time After Construction	Comment
1	0	Obtain Cores Immediately After Construction
2	3	Obtain Cores during spring, summer or fall
3	6	Obtain Cores during spring, summer or fall
4	12	Obtain Cores during spring, summer or fall
5	18	Obtain Cores during spring, summer or fall
6	24	Obtain Cores during fall
7	48	Obtain Cores during fall
8	96	Obtain Cores during fall
9	168	Obtain Cores during fall

NOTE: Obtain cores from the end of test section for both SHRP and ODOT Sections

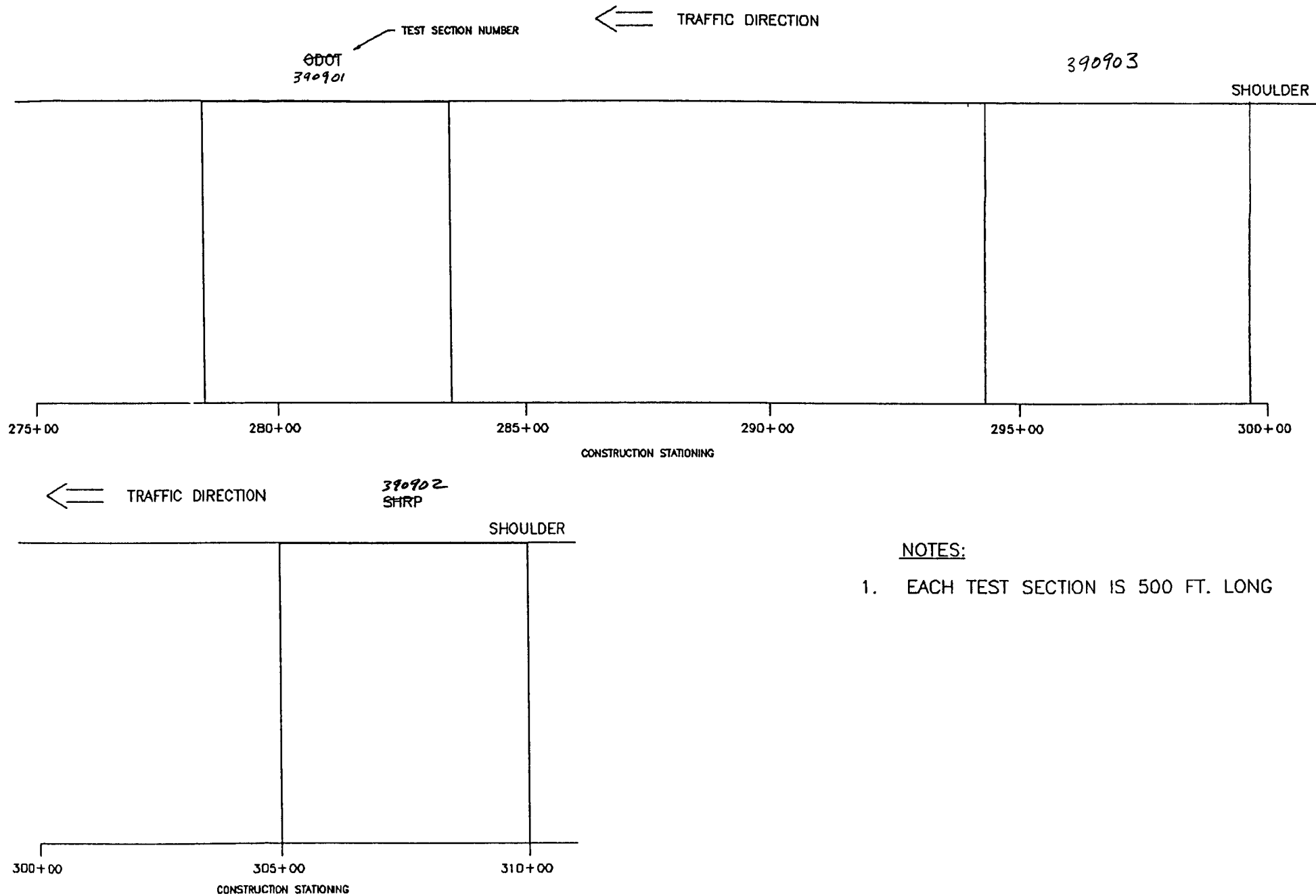
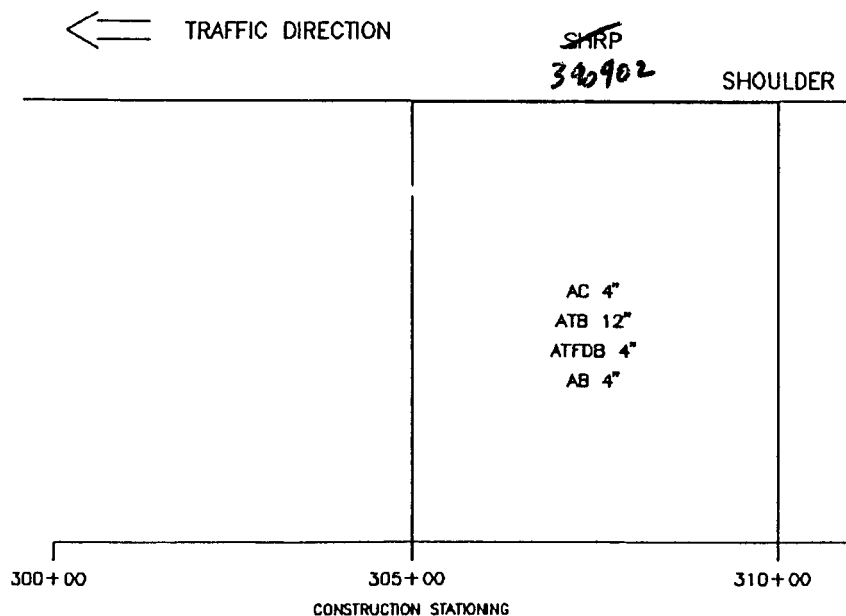
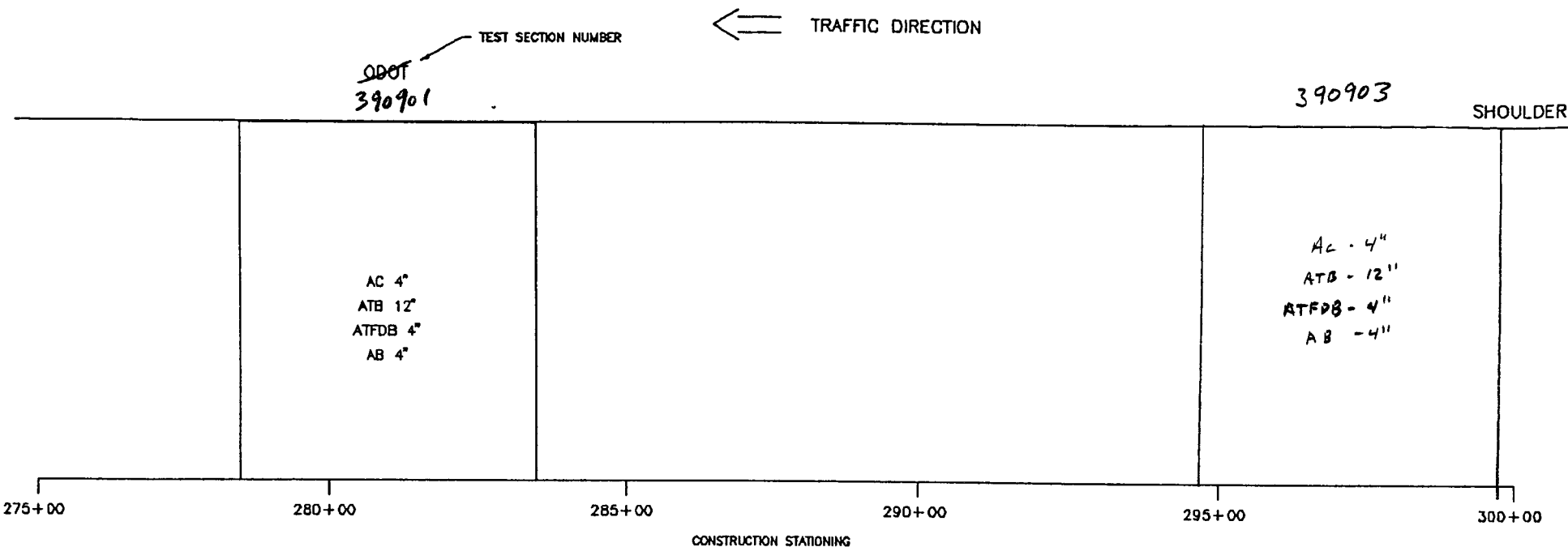


FIG. 1 - LAYOUT OF TEST SECTIONS - SPS9



NOTES:

AC - ASPHALT CONCRETE

ATB - ASPHALT TREATED BASE

ATFDB - ASPHALT TREATED FREE DRAINAGE
BASE

AB - Aggregate Base

FIG. 2 - DESIGN FEATURES OF TEST SECTIONS - SPS9

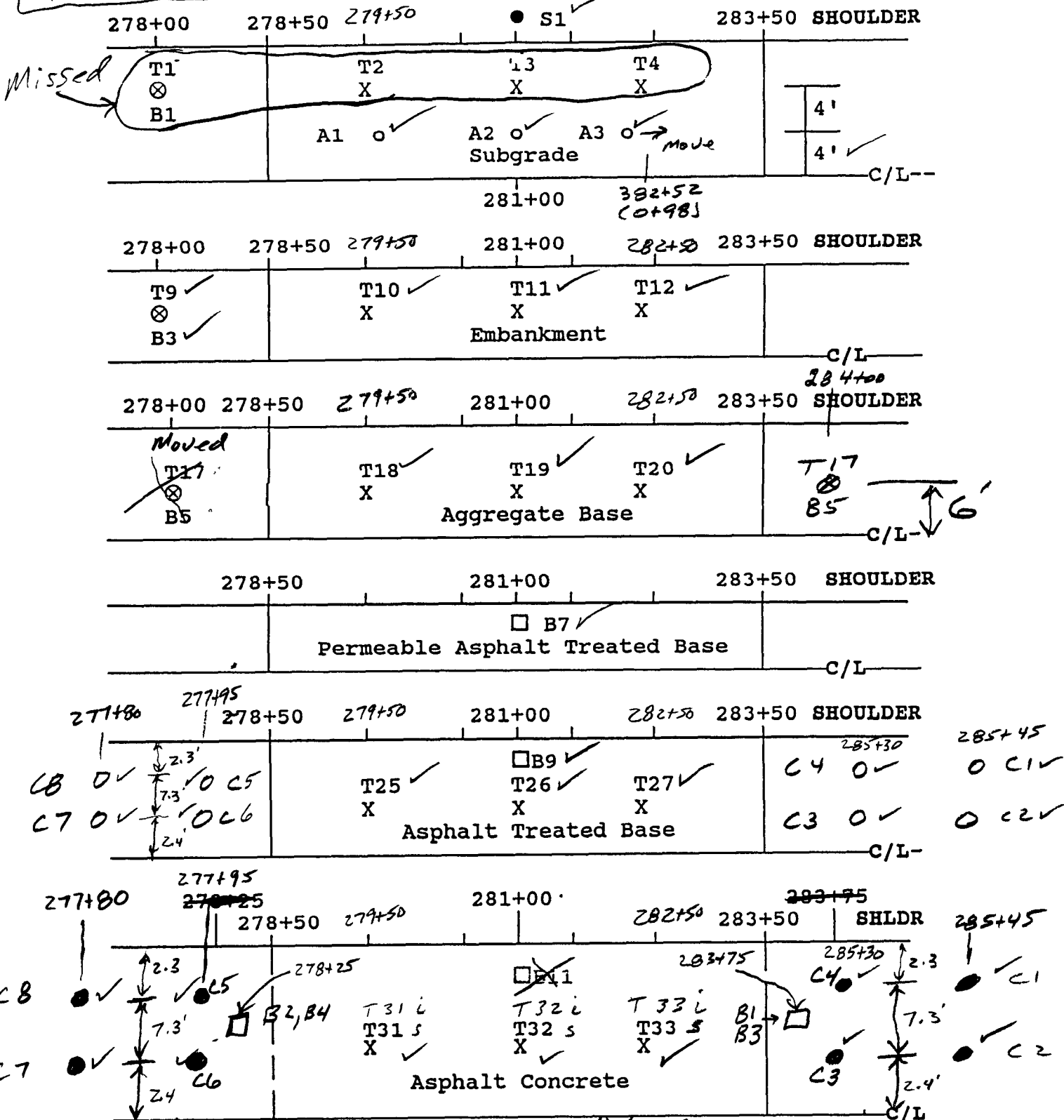
FIGURE 3 - Legend for Figures 4 to 16

B1 - B2	Bulk Samples and Moisture Samples from Prepared Subgrade
B3 - B4	Bulk Samples and Moisture Samples from Prepared Embankment
B5 - B6	Bulk Samples and Moisture Samples from Compacted Aggregate Base
B7 - B8	Bulk Sample from Uncompacted Permeable Asphalt Treated Material
B9 - B10	Bulk Sample from Uncompacted Asphalt Treated Base
B11 - B12	Bulk Samples of Uncompacted Asphalt Concrete. Obtain Samples from Intermediate Course and Surface Course
A1 - A6	Shelby Tube Samples from Subgrade
S1 - S2	Shoulder Probes (20 ft)
T1 - T8	In-place Density and Moisture Tests on Prepared Subgrade
T9 - T16	In-place Density and Moisture Tests on Prepared Embankment
T17 - T24	In-Place Density and Moisture Tests on Prepared Aggregate Base
T25 - T30	In-Place Density Tests on Prepared Asphalt Treated Base
T31 - T36	In-Place Density Tests on Prepared Asphalt Concrete. Perform Tests on Intermediate Course and Surface Course
C1 - C21	Asphalt Cores. At specified locations obtain cores from the Asphalt Treated Base in addition to the asphalt concrete cores

0001 AC-20
 1+00 = 282+50
 2+50 = 281+00
 4+00 = 279+50

Section 390901 1000' section - 276+00 - 286+00

← TRAFFIC DIRECTION



B1, B2 - Sample - intermediate coarse

B3, B4 - Sample - surface coarse

NOTES: (1) Conduct elevation measurements on all layers. (2) Conduct FWD testing on all layers except AC (3) Perform nuclear density tests on asphalt concrete after completion of the intermediate course and the surface course

see attached sheets for better details of cores + bulk samples

FIG. 4 SAMPLING AND TESTING FOR ODOT SECTION

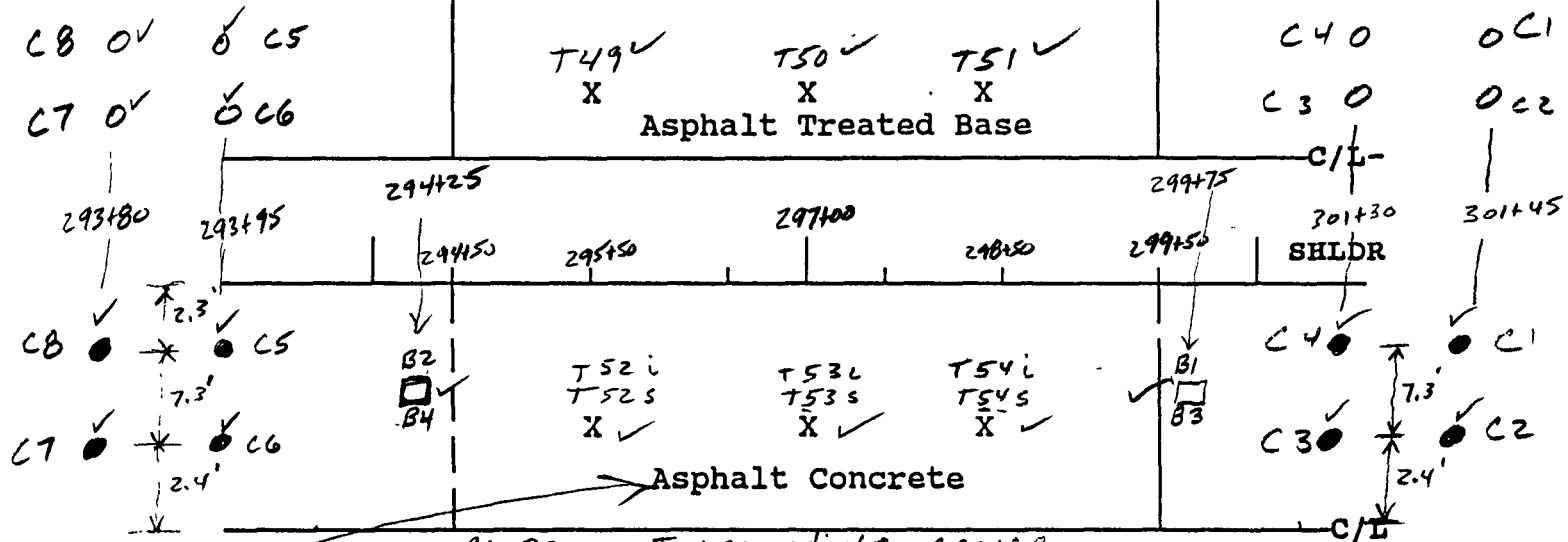
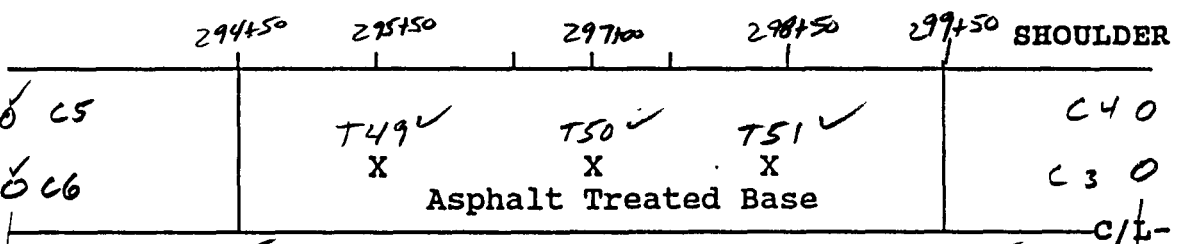
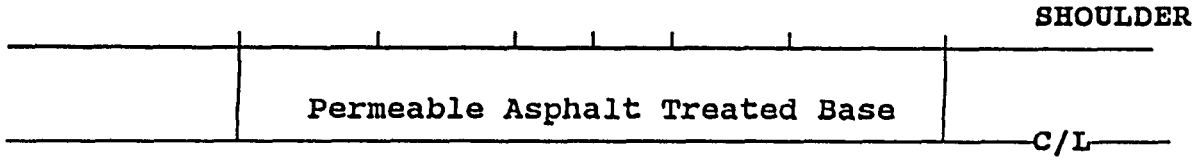
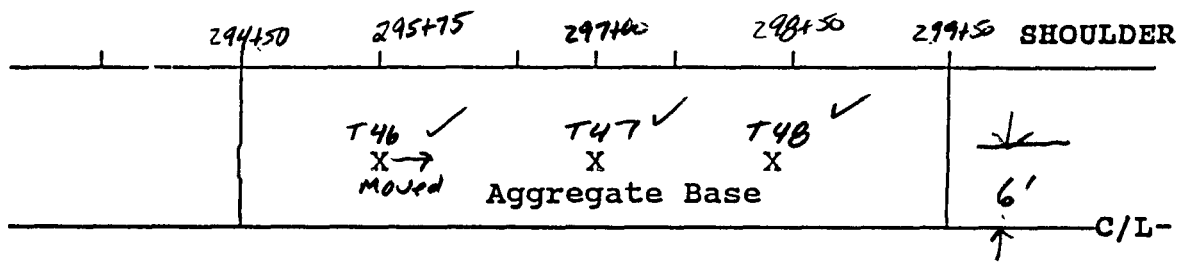
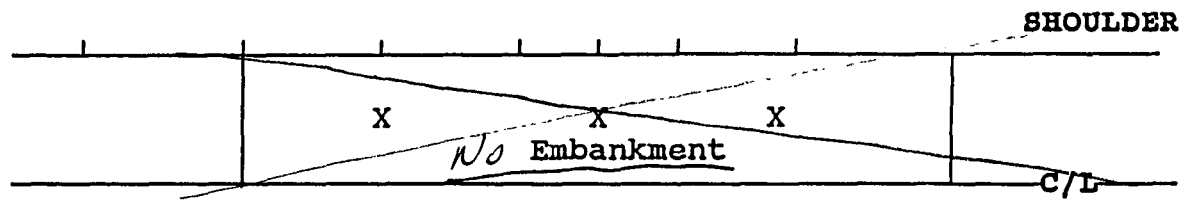
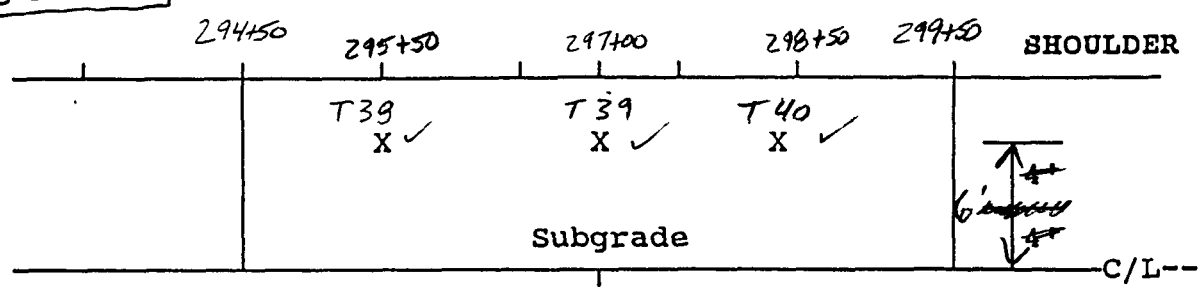
390901

1+00 = 298+50
 2+50 = 297+00
 4+00 = 295+00

Section 390903

500' Section - 294+50 - 297+50
 1000' Section - 292+00 - 302+00

← TRAFFIC DIRECTION



B1, B2 - Intermediate coarse
 B3, 4 - Surface Coarse

NOTES: (1) Conduct elevation measurements on all layers. (2) Conduct FWD testing on all layers except AC (3) Perform nuclear density tests on asphalt concrete after completion of the intermediate course and the surface course

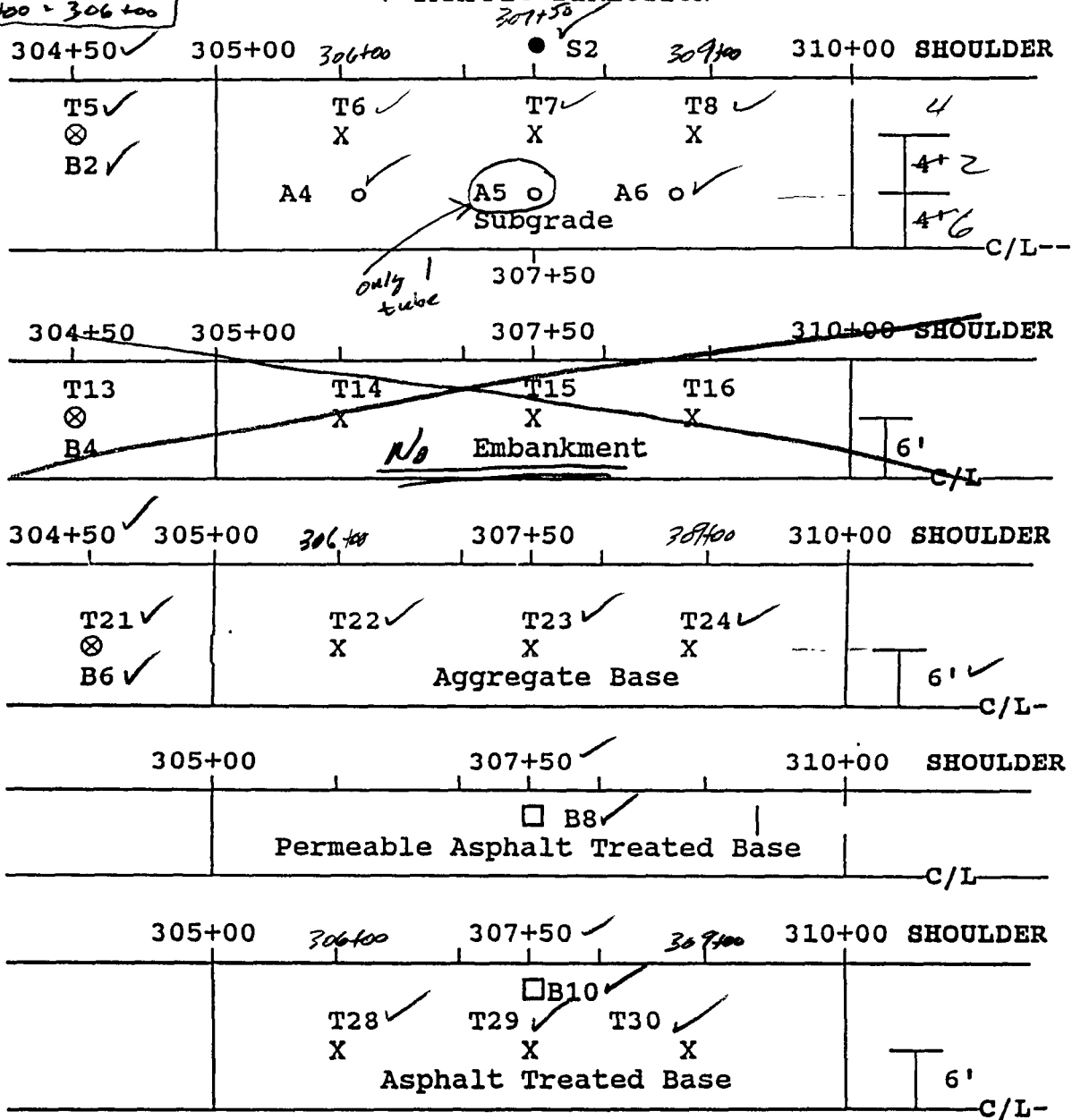
FIG. 4A SAMPLING AND TESTING FOR Section 390903

For more detailed description of core & Bulk samples
 see attached

superpage RF 58/28 Section 390902 - 1000' Section 302+50' - 312+50'

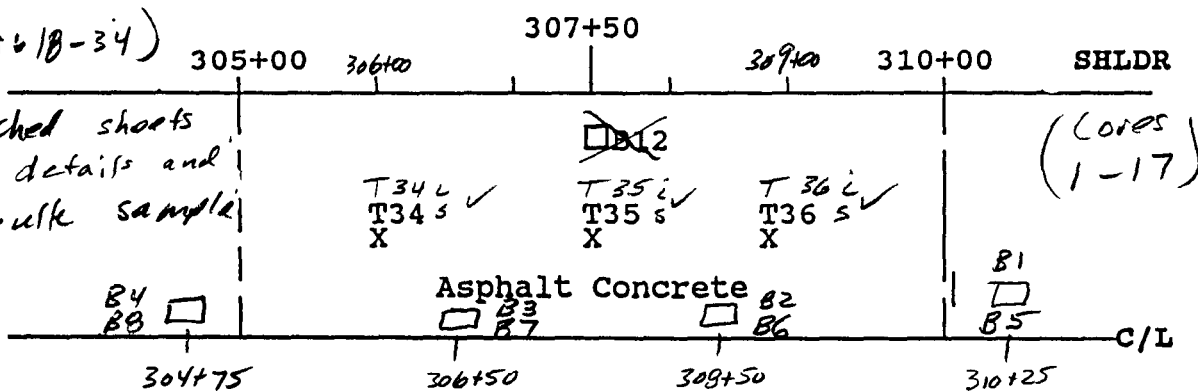
1+00 = 309+00
2+50 = 307+50
4+00 = 306+00

TRAFFIC DIRECTION



(Cores 18-34)

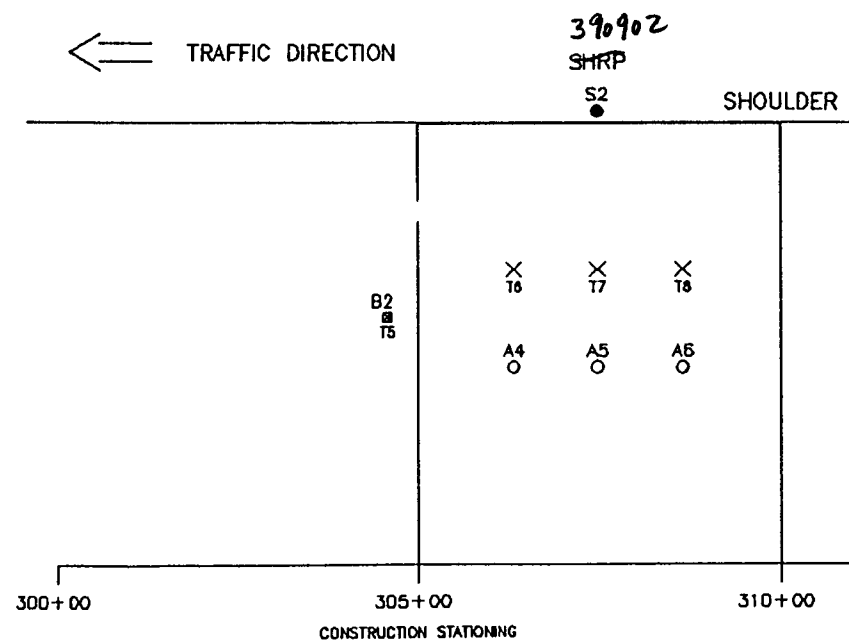
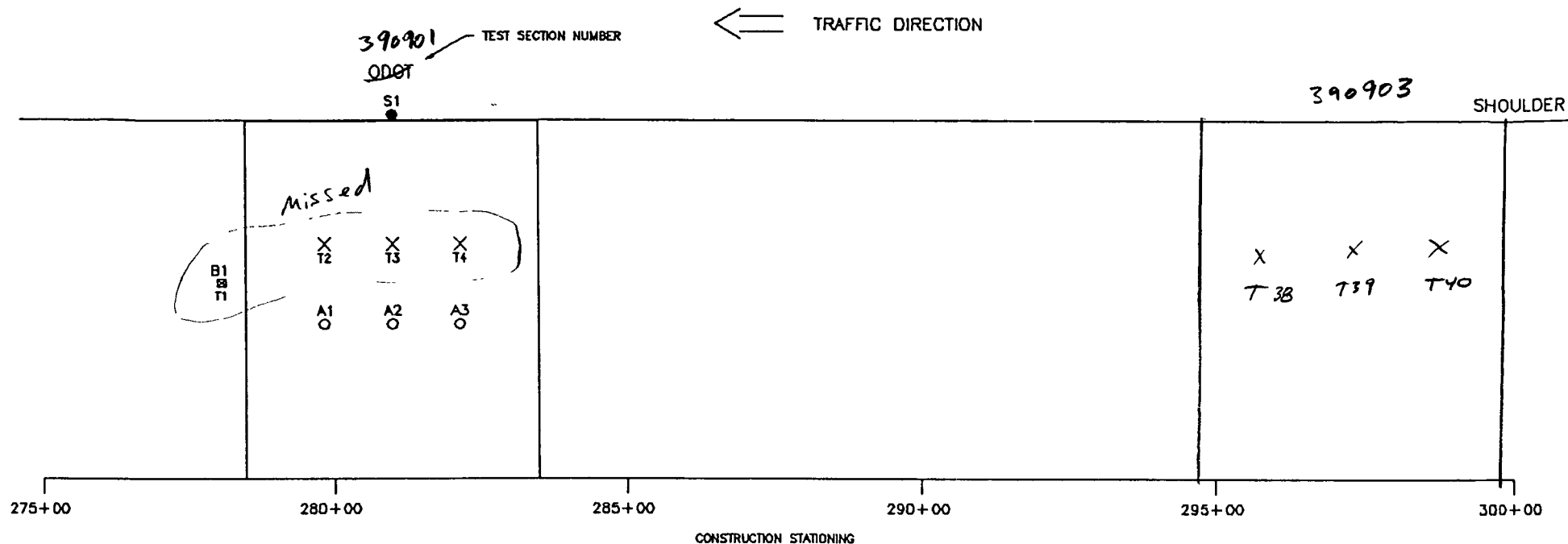
See attached sheets for core details and better bulk sample details



NOTES: (1) Conduct elevation measurements on all layers. (2) Conduct FWD testing on all layers except AC (3) Perform nuclear density tests on asphalt concrete after completion of the intermediate course and the surface course

FIG. 5 SAMPLING AND TESTING FOR

SECTION 390902



NOTES:

1. T - NUCLEAR DENSITY/MOISTURE TESTS, B - BULK AND MOISTURE SAMPLES, A - THIN WALL TUBES, S - SHOULDER PROBES
2. CONDUCT ELEVATION MEASUREMENTS AND FWD TESTING ON BOTH SECTIONS
3. CONDUCT NUCLEAR DENSITY TESTS ON BULK SAMPLING LOCATIONS BEFORE SAMPLING

FIG. 6 - OVERVIEW OF SAMPLING AND FIELD TESTING ON SUBGRADE - SPS9

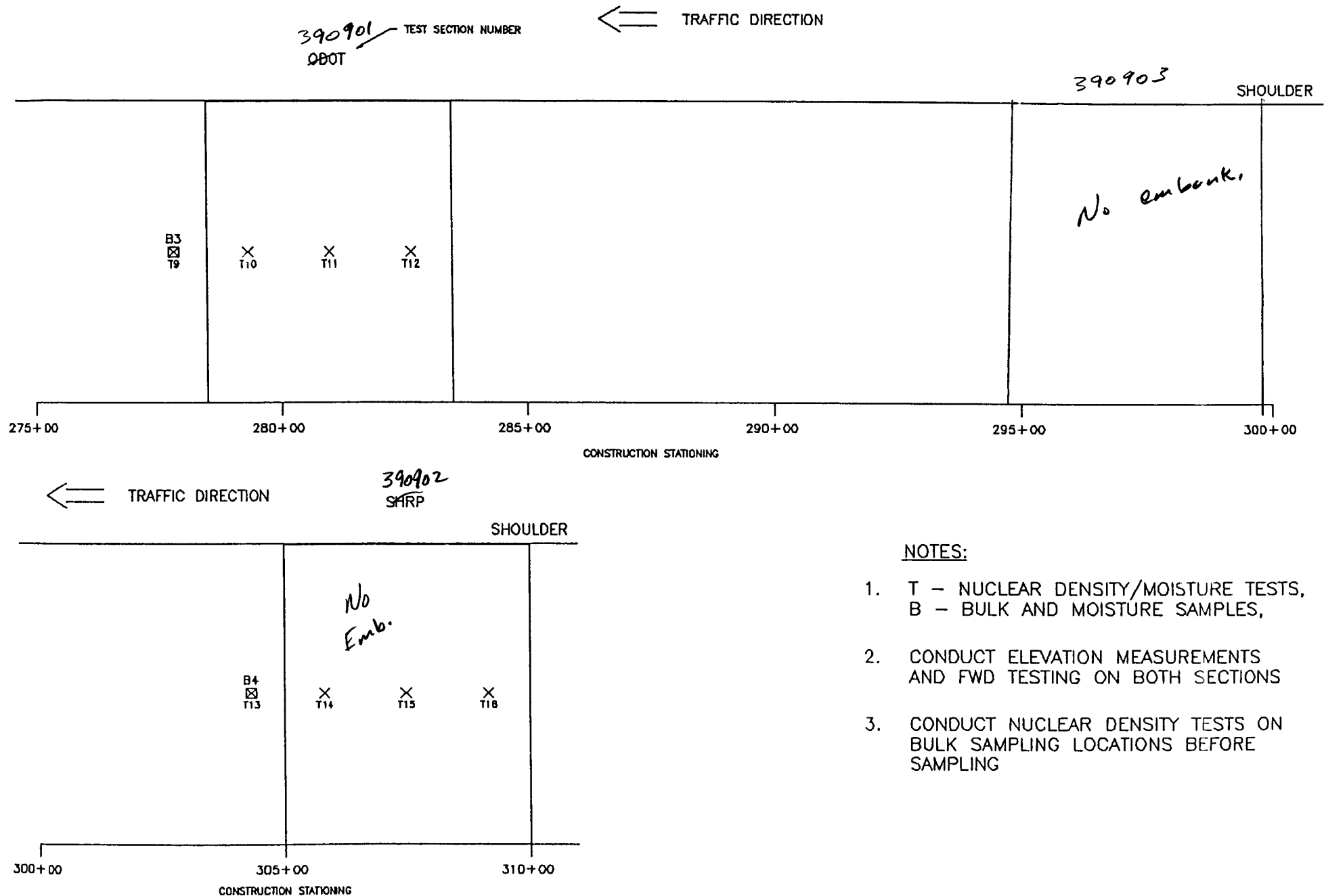
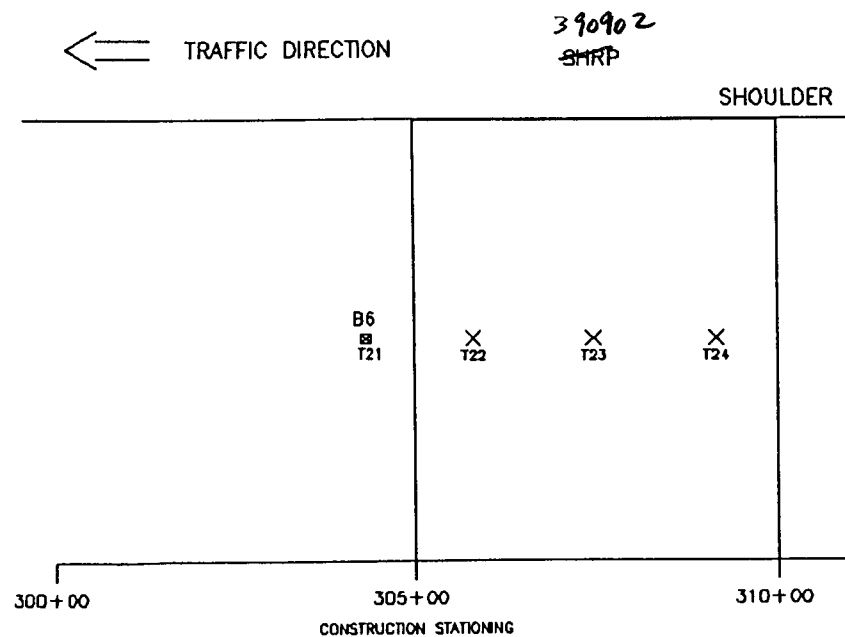
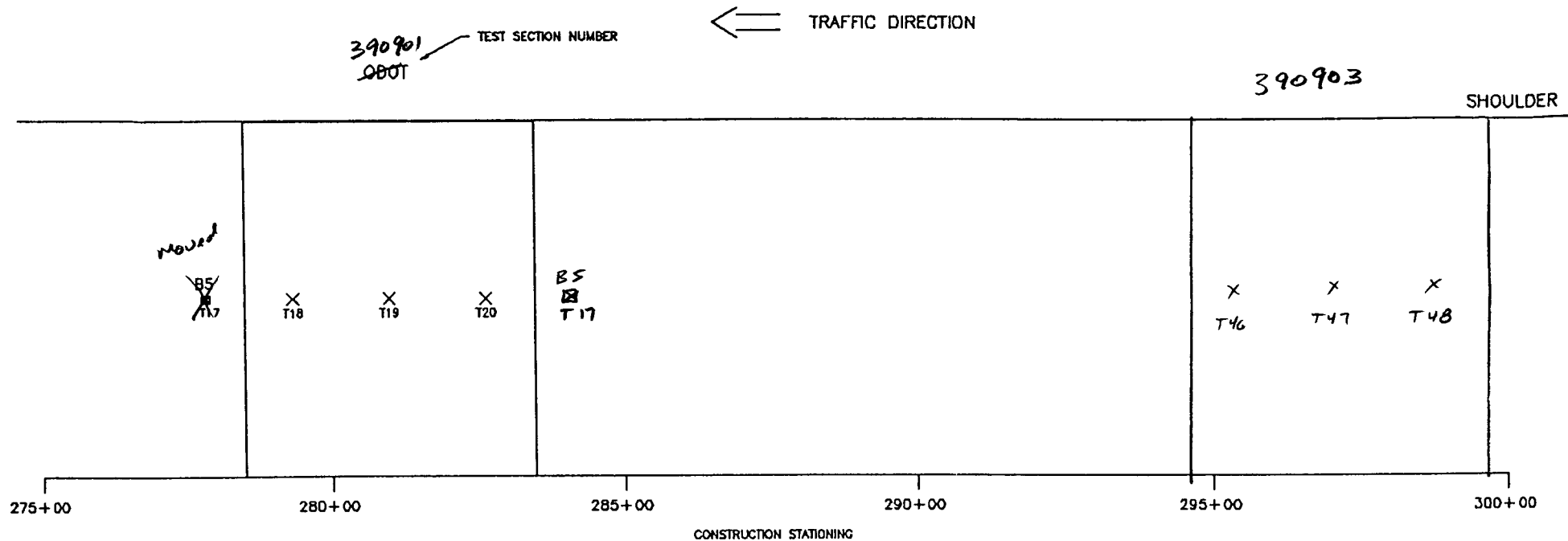


FIG. 7 - OVERVIEW OF SAMPLING AND FIELD TESTING PLAN FOR EMBANKMENT - SPS9



NOTES:

1. T - NUCLEAR DENSITY/MOISTURE TESTS, B - BULK AND MOISTURE SAMPLES
2. CONDUCT ELEVATION MEASUREMENTS AND FWD TESTING ON BOTH SECTIONS
3. CONDUCT NUCLEAR DENSITY TESTS ON BULK SAMPLING LOCATIONS BEFORE SAMPLING

FIG. 8 - OVERVIEW OF SAMPLING AND FIELD TESTING PLAN ON AGGREGATE BASE - SPS9

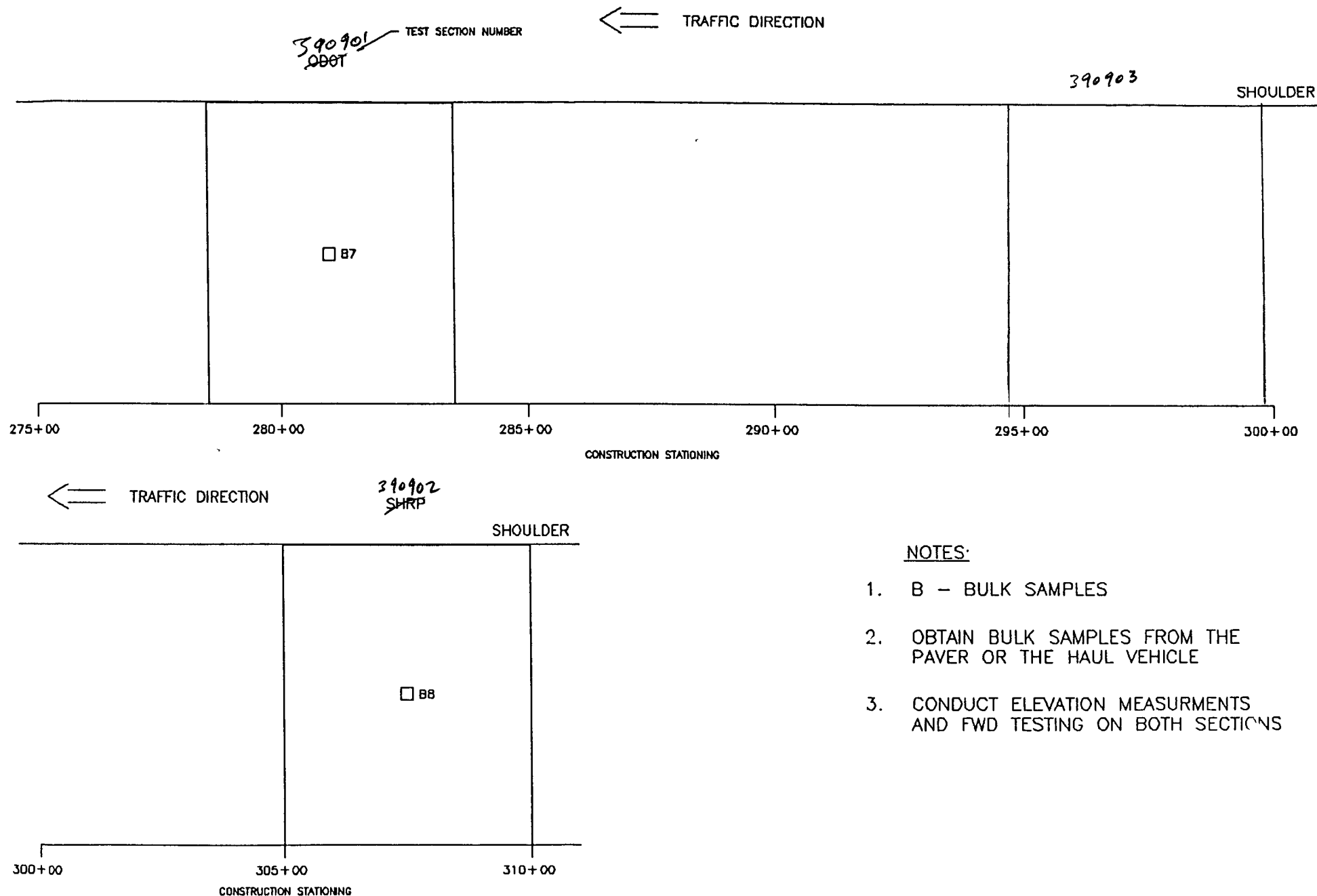


FIG. 9 - OVERVIEW OF SAMPLING AND FIELD TESTING PLAN
FOR ASPHALT FREE DRAINAGE BASE - SPS9

This sheet
has changed
See attached
for revisions

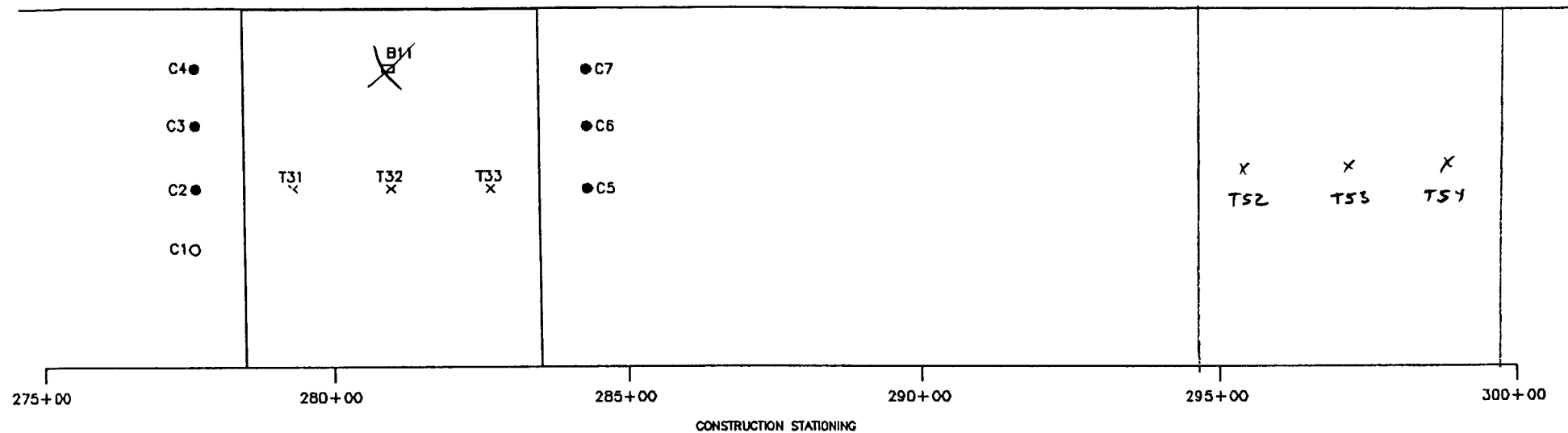
390901
ODOT

TEST SECTION NUMBER

← TRAFFIC DIRECTION

390903

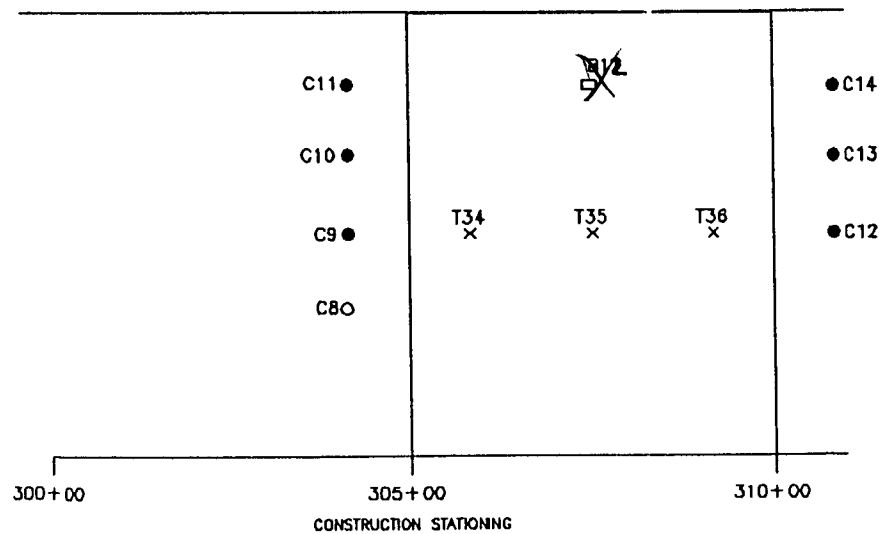
SHOULDER



← TRAFFIC DIRECTION

390902
SHRP

SHOULDER



NOTES

1. SEE FIG. 13 AND FIG. 14 FOR SAMPLING LOCATIONS AND TIME TABLE FOR OBTAINING CORES FOR ASPHALT TESTING
2. C - CORES, B - BULK SAMPLES
T - NUCLEAR DENSITY TESTS
3. OBTAIN BULK SAMPLES FROM THE INTERMEDIATE COURSE AND SURFACE COURSE AT THE SPECIFIED LOCATIONS FROM THE PAVER OR HAUL VEHICLE
4. OBTAIN 3, 5 GAL. SAMPLES OF ASPHALT CEMENT FROM PLANT
5. CONDUCT NUCLEAR DENSITY TESTS AFTER COMPLETION OF INTERMEDIATE AND SURFACE COURSE
6. CONDUCT ELEVATION MEASUREMENTS ON THE FINISHED AC SURFACE

- CORE FROM AC ONLY
- CORE FROM AC AND ATB

FIG 11 - OVERVIEW OF SAMPLING AND FIELD TESTING FOR ASPHALT CONCRETE - SPS9

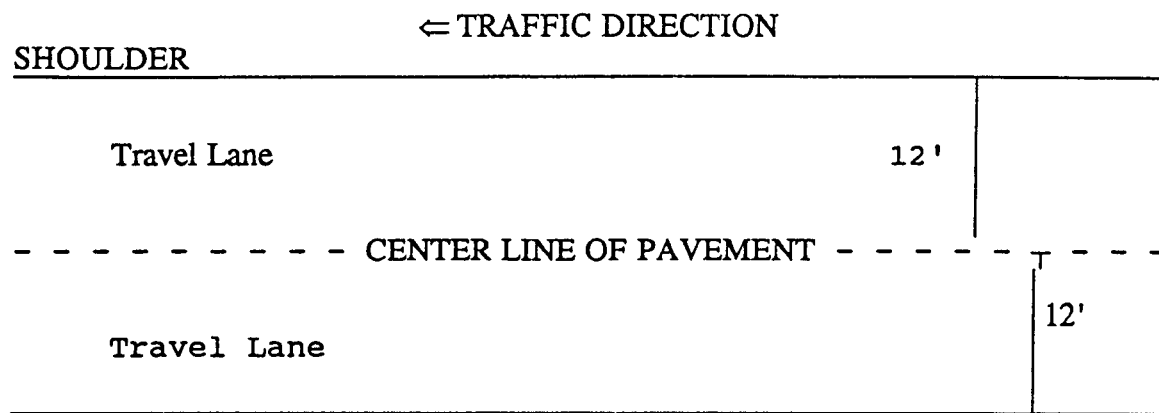


Figure 12 Location of Center Line of Pavement - SPS9

Changed

ASPHALT SURFACE SAMPLING DETAILS

AC8

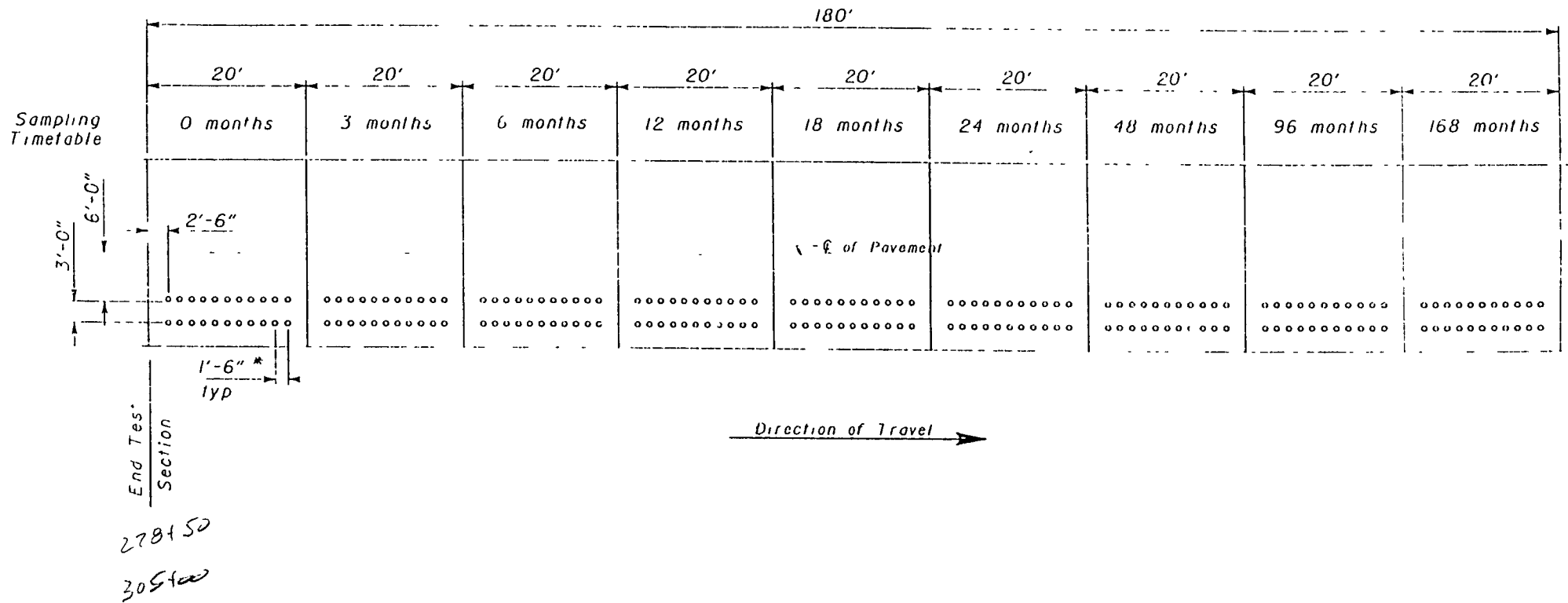


Fig. 13 Cores for Asphalt Testing – Sampling Locations and Timetable